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NEW GENERA AND SPECIES OF PHALAENIDAE[1]

(Lepidoptera)

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The specimens discussed herein were, for the most part, set aside by the author some six years ago in the Barnes collection pending opportunity for comparison with large Neotropical collections.

Two new genera and four new species are described; four genera and two species are listed as heretofore unknown from the United States.

HADENINÆ

Ommatostolidea Benjamin, n. gen.

Type: *Ommatostolidea julitæ*, new species

Tongue weak but functional; palpi short, upturned, the second joint reaching slightly beyond the clypeus and fringed with long hair below, the third short and porrect; frons relatively smooth, slightly granular, lacking projections, except for a slightly raised ventral transverse margin; clypeal plate disconnected, small; eyes large and rounded, with sparse hair seen only with difficulty, the individual hairs moderate in length, a few hair scales of the vestiture droop over the eye from near the base of the antenna presenting a lashed appearance; antenna of female simple, ciliated; collar clothed with broad scales and hair, remainder of thorax clothed mainly with hair and lacking well defined scale crests although the metathoracic hair tends to part into two diffused tufts; tibiæ lacking spines and claws, moderately fringed with hair; tarsi normally spined; abdomen smoothly scaled, devoid of crests and tuftings. Fore wing narrow, elongate, costa and inner margin subparallel except near base, apex acute, the termen oblique, scarcely rounded; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 7 and 8 to form the areole, the stalking of 7 and 8 short; 11 from cell. Hind wing with vein 3 from near angle of cell; 4 from angle; 5 obsolescent from somewhat below middle of discocellulars, nearly parallel with 4; 6 and 7 shortly stalked; 8 anastomosing with cell near base only.

[1] Noctuidæ of Authors.

Related to *Ommatostola* Grote, differing by the possession of a weaker tongue; the shorter and more hairy palpi; the frons not protuberant; the nearly parallel costal and inner margins of the fore wing with straighter termen; and the broader scales of the collar. Related to *Eubuchholzia* Barnes and Benjamin, the fore wing similarly shaped but longer; lacking the strongly bulged frons; the tongue weaker; the thoracic vestiture more hairy.

Ommatostolidea julitæ Benjamin, n. sp.

Head, thorax, and fore wing uniformly straw colored, lacking all trace of markings; the fringe of the fore wing pale cream color and the only disconcolorous part of the wing. Hind wing, including fringe, uniformly pale silken cream color. Abdomen concolorous with the hind wing. Beneath, all wings and fringes concolorously pale cream color. Expanse, 42 mm.

Type locality: Douglas, Ariz.

Holotype: Female, unique, dated "July," Cat. No. 44331, U. S. N. M.

CUCULLIINÆ

Emariannia Benjamin, n. gen.

Type: *Emariannia cucullidea*, new species

Tongue strong; palpi porrect, short, not exceeding the frons, fringed with hairlike scales below; antennæ simple and ciliated in both sexes, the joints tightly compressed, the cilia very short; eye naked, with weak lashes from in front and behind; frons strongly protuberant with a strong thin protuberant clypeal plate which is connected on each end by a strongly raised oblique ridge to a long central process that possesses a thin but strongly produced terminal ring surrounding a large central excavation; the frontal projections, with the exception of the terminal structure, hidden by a dense vestiture of scales, the length of the total projection of the frons and its armature being approximately one and a half times the width of the eye; thorax clothed mainly with scales, the collar produced to a slight hood, the metathorax with a strong pair of tufts; abdomen without crests or tufts; tibiæ without spines or claws; fore tarsus with the spines more curved, in a clawlike fashion, than the spines of the mid and hind tarsi, but not clawlike in size. Fore wing elongate, the apex rounded, the termen nearly erect between costa and vein 5, thence inwardly obliquely excurved to inner margin; veins 3 and 5 from near angle of cell; 6 from near upper angle; 9 from 10 anastomosing with the short stalk of 7 and 8 to form the areole; 11 from cell. Hind

wing with veins 3 and 4 from lower angle of cell; 5 obsolescent, bent at base somewhat more than normal for a trifid; 6 and 7 shortly stalked from upper angle.

Emariannia cucullidea Benjamin, n. sp.

Fore wing dull luteous mixed with black and some white; basal line and dash obsolete; transverse anterior line obsolescent, fuscous, produced into three long distal points, the medial point, somewhat longer than the other two, includes the claviform area; orbicular faintly outlined by fuscous, flattened, whitish, practically contiguous with the transverse anterior line; reniform faintly outlined by fuscous, irregular, the upper half strongly crescent shaped and filled with luteous, the lower portion recurved, filled with white and produced to a mesial point near the extremity of the cell; no median shade; median area largely appearing as fuscous gray overpowdering a luteous ground; transverse posterior line fuscous, geminate, the included space pale, waved, strongly excurved around the cell, obliquely incurved below, outwardly defined by some gray powderings; subterminal line obsolescent, pale, mainly defined by a luteous shade in the distal half of the subterminal area somewhat contrasting with the terminal area which is slightly more powdered with gray; terminal line thin, black, interrupted by thin pale streaks which intersect the gray and black lined and interlined fringe. Hind wings nearly pure silken creamy white in the male; with a thin fuscous terminal line; fringe concolorous with the wing; female with some fuscous powdering distally. Beneath whitish, silken; male with the forewing darkened with fuscous gray, the terminal lines and fringes as on the upper side; female similar but with a very few fuscous scales powdering the costal and distal portions of the hind wing. Expanse, 36 mm.

Type locality: Alpine, Tex.

Number and sexes of types: Holotype male; Allotype female; both 8-14 July, 1926, (O. C. Poling), Cat. No. 44332, U. S. N. M.

Apatelinæ

Speocropia fernæ Benjamin, n. sp.

Head, thorax, and fore wing dull rufous brown mixed with black; basal half line geminate, defined by black, excurved; transverse posterior line geminate, defined by faint black edging, in general outwardly oblique from costa to submedian fold, there obscured, inwardly oblique below vein 1; claviform small, outlined by black; orbicular obsolete, the basal area of the cell marked by a rufous suffusion; an obscure powdery black median shade outwardly oblique from costa, contiguous with the base of the reniform, extending to about vein 3, thence inwardly oblique to inner margin; reniform poorly defined, faintly outlined by black, pale,

with an obscure dusky central crescent; transverse posterior line geminate, defined by black, the included space pale, waved, bent outward below costa, nearly oblique to about vein 4, thence obliquely incurved to inner margin; subterminal line faint, ochreous, partly defined and partly obscured by black powderings; with a heavy black dash across the terminal and subterminal areas between veins 1 and 2; and a shorter dash crossing the terminal area between veins 3 and 4; a terminal line of black dots between the veins; fringe checkered fuscous and luteous. Hind wing fuscous brown; with an obscure thin dark terminal line; fringe pale and sordid. Beneath sordid whitish, the fore wing heavily suffused with fuscous brown and black, with a blackish spot on the costa marking the median shade and blackish powderings occupying the subterminal area; the hind wing irrorated with fuscous which forms an obscure discal mark and a subterminal shade. Expanse 32 mm.

Type locality: Brownsville, Tex.

Holotype: Female, unique, labeled "5-11" (Geo. Dorner), Cat. No. 44333, U. S. N. M.

Both Hampson (1908, Cat. Lep. Phal. B. M., VII, 255) and Draudt, (Seitz, Macrolepid., VII, 218) state that *Speocropia* possesses a raised edge on the conical projection of the frons (similar to *Euxoa*). The author has examined specimens of every species assigned to the genus by both Hampson and Draudt, including the genotype "*Hadena*" *scriptura* Walker, and found the frons cone shaped and tapering but lacking any raised rim. The coreous clypeal plate mentioned by both Hampson and Draudt is well defined.

Agrotisia[2] evelinæ Benjamin, n. sp.

Head dark, the vestiture mixed dark brown and black with a few pale scales; collar mixed dark brown and black interrupted by a few pale scales on basal two-thirds, distal third disconcolorously paler, sordid violaceous; thorax and tegulæ sordid violaceous speckled with a few fuscous scales; abdomen similarly colored, somewhat more luteous. Fore wing washed with violaceous, tinted with luteous brown, and marked with black; basal half line black, geminate; transverse anterior line black, geminate, the inner part not distinct, inwardly oblique from costa through the cell, thence outwardly oblique, excurved in the submedian interspace and again somewhat excurved below vein 1 where a black spot in the shape of a circular triangle is formed; a heavy black blotch on the costa, filling the area between the two aforementioned lines, and extend-

[2] *Agrotisia* Hampson, *subhyalina* Hampson sole species and designated type; 1908, Cat. Lep. Phal. B. M., VII. 692, f. 184.

ing to slightly below the cell; orbicular absent; claviform practically absent, its position indicated by a luteous cast on the violaceous ground; a median shade starts as an irregular black blotch on the costa, obscures the reniform, proceeds in a generally outwardly oblique direction to vein 2, from thence being incurved and inwardly oblique to the inner margin; transverse posterior line geminate, black, waved, defined by two small black blotches on the costa, excurved around the cell, and somewhat incurved to inner margin; subterminal line irregular, mainly defined by the powdery black filling of the subterminal space, which possesses two small pale points on the costa; a faint terminal dark line accentuated into dots at the extremities of the veins; fringe luteous at base, with pale tip and waved fuscous interline. Hind wings semihyaline white; the costal margin, and to some extent the veins, powdered with fuscous, which forms faint dots on veins 2, 3, 4, and 6 indicating a median line; discal mark only visible because of showing through the wing; a thin irregular fuscous terminal line; fringe luteous at the base, with paler tip. Beneath: Fore wing with pale ground heavily suffused with sordid fuscous brown and powdered with black which marks the median and transverse posterior lines and the filling of the subterminal space in the costal area, terminal line and fringe as on upper side; hind wing semihyaline white, powdered with some fuscous in the costal region, with faint fuscous dashes on veins 2, 3, 4, 6, 7, and 8 indicating a median line, and with a small fuscous spot marking the middle of the discocellular vein; terminal line and fringe as on upper side. Expanse 38 mm.

Type locality: Near Alpine, Tex.

Holotype: Male, unique, labeled 15-30 May 1926, (O. C. Poling); Cat. No. 44334, U. S. N. M.

Apparently agrees with specimens from South America identified by Dr. Schaus as *Agrotisia subhyalina* in so far as the external generic characters are concerned. Hampson[3] states that *A. subhyalina* is "without distinct crests." A half dozen examples in the National Museum each have the thoracic vestiture too disturbed to be studied. The type of *evelinæ* shows an indistinct spreading crest on the prothorax.

Acontiinæ[4]

Phœnicophanta modestula Dyar

1924, Dyar, Ins. Inscit. Menstr., XII, 16, *Phœnicophanta.*

This species was described from Sierro de Guerrero, Mexico.

[3] Hampson, 1908, Cat. Lep. Phal. B. M., VII, 255.
[4] Erastriinæ of authors. See, 1927, Barnes & Benjamin, Bull. Bklyn Ent. Soc., XXI, 182, (1926); 1929, l.c., XXIV, 170.

A single poor female from Brownsville, Texas (Geo. Dorner), dated "7-11," appears to be the same species.

HYPENINÆ

RAPARNA MELANOSPILA Gn.

1852, Guenée, Noct., II, 4, *Euperia.*

The following Florida specimens are in the National Collection. One male, labeled Chokoloskee, and two females, labeled St. Petersburg, Sept. 24-30 and Oct. 24-30, were received with the Barnes material; one female, labeled Altamont, IX-17-1924, (F. R. Cole), from the National Museum unsorted material.

The identification is based on a series from Cuba, Mexico, and Venezuela, a Cuban specimen having been matched by Dr. Schaus with the series in the British Museum. The generic name *Raparna* is used, following a Hampson manuscript classification. The species belongs to Smith's "Pseudodeltoid" series, to the beginning of the "Hypeninæ" of Barnes and McDunnough, and to the "Noctuinæ" of Hampson's revised version of 1926,[5] vein 5 of the hind wing being rather weak but tubular, and parellel to vein 4, the male without secondary sexual modification.

Temporarily the name may be added to the North American Lists following *Diallagma latiorella* Wlk.

TATHORHYNCHUS ANGUSTIORATA Grt.

1882, Grote, Bull. U. S. Geol. Surv., VI, 584, *Platysenta.*

The placement of *Reparna melanospila* Gn. following *Diallagma latiorella* Wlk. raises the question of what to do with "*Diallagma*" *angustiorata* Grote.

This species fits well into Hampson's genus *Tathorhynchus.*[6]

[5] New Gen. and Sp. Noct. Br. Mus.

[6] *Tathorhynchus* Hamps., type *Scopula vinctalis* Wlk., 1894, Hamps., Fauna Brit. India, Moths, II, 268, *vinctale* Wlk. sole species and designated type; 1913, Warren, in Seitz, Macrolepid., III, 372, as *Tathorhyncus* (!), type designated *exsiccata* presumably for synonym *vinctalis.*

THE SPECIES OF MISCODERA

(Coleoptera—Carabidæ)

BY MELVILLE H. HATCH

Miscodera insignis Mann. is known from Sitka, Alaska (Hamilton, Trans. Am. Ent. Soc., XXI, 1894, p. 12) and Washington (Seattle—O. B. Johnson; Olympic Hot Springs—M. H. Hatch).

Miscodera arctica Payk., in its more typical phase, is known from northern England, Scotland (Fowler, Col. Brit. Isl., I, 1887, p. 26), the Swiss and Tyrolean Alps, Silesia, northern Germany, Denmark, Norway, Sweden, Lapland, Finland, Leningrad, and Esthonia (Jacobson, Käf. Rüssl. W.-Eur., 1910, p. 227). Horn (Trans. Am. Ent. Soc., IX, 1881, p. 168) held that the Siberian and North American forms known as *erythropus* Mots., *americanus* Mann., and *hardyi* Chaud. were not distinct. More recent authors, however, (Ganglbauer, Käf. Mitteleur., I, 1892, p. 145; Jacobson, l.c.) regard these as constituting the subspecies *erythropus* Mots., which has the following distribution: Siberia (L. Baikal, Transbaikalia, Amur, Yakuts) (Heyden, Cat. Col. Sibirien, 1880-81, p. 24; Jacobson, l.c.); Alaska (Kenai) (Hamilton, l.c.); Washington (Bonaparte Mt., 5000 to 7000 ft.—M. C. Lane); Alberta (Glacier L., 4800 ft.) (Thorington, Ent. News, XXXVIII, 1927, p. 178-180); Montana (Grasshopper Glacier, 9000 ft.—M. C. Lane); Ontario (Cochrane) (Notman, Jour. N. Y. Ent. Soc., XXVII, 1919, p. 93); Michigan (White Fish Point) (Andrews, Pap. Mich. Acad. Sci. Arts and L., I, 1923, p. 337); New York (Keene Valley) (Leonard, Cornell Univ. Agr. Exp. Sta., Mem. 101, 1926, p. 241); Maine (Eastport, Barber); Newfoundland (Horn, l.c.). Hubbard and Schwarz (Proc. Am. Phil. Soc., XVII, 1878, p. 628) record it from Lake Superior without further designation of locality.

The five Washington specimens of *arctica* before me agree closely with Ganglbauer's description (l.c.), except as regards the dorsal striæ. In the Washington specimens the second stria is indicated by an unimpressed series of punctures at about the basal two-fifths; the other striæ are completely wanting. Ganglbauer reports traces of five unimpressed series of punctures lateral to the impressed sutural stria. This may constitute the difference between typical *arctica* and the subspecies *erythropus* Mots.

On the basis of the Washington material before me and Ganglbauer's description, the species and subspecies of the genus may be distinguished as follows.

A. Rufous to piceo-rufous, the legs and antennæ paler; head without a transverse impression between eyes; apex of maxillary palpus rounded; pronotum longer than wide, the sides more broadly rounded, the basal constriction nearly obsolete at the middle, the base not longitudinally rugose; elytra with nine entire impressed striæ; length 9 mm.; Alaska, Washington . . . . . *insignis* Mann.

AA. Shining black or dark rufous, the legs and antennæ paler; head with a transverse impression between eyes; apex of maxillary palpus truncate; pronotum as wide as long, the sides more strongly rounded, the basal constriction impressed throughout, the base longitudinally rugose towards the hind angles; elytra with the striæ, except the sutural, consisting of more or less obsolete unimpressed series of punctures; length 6.5-7 mm. . . . . *arctica* Mots.

B. Striæ two to six represented by more or less extensive unimpressed series of punctures. Great Britain and Scandinavia to Switzerland, Tyrol, Silesia, Leningrad, and Finland . . . . . subsp. *arctica* s. str.

BB. Elytral striæ (in Washington specimens), except the sutural, obsolete, stria two only being represented by an unimpressed series of punctures at about the basal two-fifths. Eastern Siberia through Alaska to northern Washington, northern Michigan, northern New York, Maine, and Newfoundland . . . . . subsp. *erythropus* Mots.

I have no hesitation about pronouncing *insignis* Mots. the more primitive of the two species on the basis of its striate elytra and less specialized head and pronotum.

William Jacob Holland

It is with deep regret that we record the passing of our veteran lepidopterist Dr. W. J. Holland, who died on December 13, 1932, at the ripe age of 84 years. His Butterfly Book and his Moth Book have been the guides and inspiration of our younger lepidopterists for many years. But lttle more than a year ago he completed a careful revision of the Butterfly Book bringing it up to date and placing us all under a renewed obligation. Dr. Holland had a broad knowledge of the Lepidoptera founded upon a basis of sound nomenclature. His large collection of butterflies, including the W. H. Edwards collection and much invaluable type material, is now in the Carnegie Museum.

A NEW SPECIES OF PEPSIS FROM ARIZONA

(Hymenoptera—Psammocharidæ)

BY KENNETH A. SALMAN

Berkeley, California

The material from which this species is described was encountered in collections of Dr. Jos. Bequaert and the American Museum of Natural History which were examined while the writer was a graduate student at the Massachusetts Agricultural College, Amherst, Mass.

Pepsis hirsuta Salman, n. sp.

Female. Length 34 mm. Body and legs black with bluish or purplish pile. Antennæ black, shading to brown in the outer segments. Wings yellowish brown with black basal band about one-sixth the length of fore wings and one-fourth the length of hind wings; apical field fuscous, somewhat darker near margin of wings. Head, thorax, propodeum and abdomen thickly hairy, particularly beneath. All femora with long, thickly placed hairs beneath. Clypeus broadly convex; margin weakly and arcuately incised. Epicranial furrow distinct. Vertex rather strongly sculptured. Inner eye margins slightly convergent above. Third antennal segment distinctly shorter than width between eyes across vertex. Antennæ thick, tapering to apex; inner surface, particularly of segments near apex, flattened.

Shoulders of pronotum rounded; anterior surface convex; posterior margin arcuate. Scutum convexly arched anteriorly, flattened posteriorly. Scutellum broadly rounded above. Mesopleural tubercles wanting. Antero-lateral and postero-lateral surfaces of middle and hind tibiæ with distinct longitudinal furrow extending from near base almost to apex. Inner tibial spur of hind leg more than half the length of basitarsus.

Propodeum very hairy; horizontal and sloping surfaces distinct. Horizontal surface rather regularly convex; median carina distinct, flattened above or with weak median longitudinal furrow; lateral carinæ indistinct; lateral teeth moderately developed although nearly hidden by hairs; subspiracular tubercle well developed; transverse ridge moderately high, short, flattened above. Sloping surface weakly convex; excavated immediately behind transverse ridge; surface weakly rugose. Posterior lateral angles of propodeum rounded. Abdomen flattened dorsoventrally. Ventral furrow of second sternite distinct, although not deep, sinuate and without well marked posterior prolongations.

Holotype. Female. Southern Arizona (Bequaert). Deposited in the collection of the Museum of Comparative Zoology at Harvard University, Cambridge, Mass. Paratype. Female. Yavapai

Co., Arizona. August (O. Buchholz Coll.). Deposited in the collection of the American Museum of Natural History, New York City.

This species agrees very closely with the existing descriptions of *cassandra* Mocs., but differs from the characters given for that species by Lucas to a slight extent. In view of the fact that *cassandra* has been reported only from Chile in South America while *hirsuta* is known only from Arizona, it appears improbable that they are the same. *Hirsuta* is distinct from any other species of *Pepsis* that has been reported from North America.

Three species, *cassiope* Mocs., *hirsuta* n. sp. and *cassandra* Mocs. apparently form a compact group having longitudinal furrows on the middle and hind tibiæ, hairy bodies and flattened abdomens as characters in common. It is felt that some recognition should be given this group but, in view of the fact that the males of these species are not known, confusion instead of clarity might result by giving the group a subgeneric designation.

Barton Warren Evermann

Since the appearance of the last number of the Pan-Pacific Entomologist the California Academy of Sciences has met with a great loss in the death of its Director, Dr. Barton Warren Evermann, that occurred on September 27, 1932. Dr. Evermann was a true naturalist in the broadest meaning of that term. While not an entomologist as we generally use that word, he was deeply interested in the development of the Department of Entomology of the Academy and did all he could to advance the research activities of that department. His interests were as broad as the field of biological science, and the advancement of research in all departments of the Academy during his administration, extending from 1914 until his death, was limited only by the funds available. He was a leader in the scientific work on the Coast, a most genial companion and a true friend, and his loss will be a personal one to the scientific workers of this country and especially to those in the West.—E. P. Van Duzee.

ON A COLLECTION OF CENTIPEDS AND MILLIPEDS FROM COSTA RICA

BY RALPH V. CHAMBERLIN

The following lists are based on two small but valuable collections of centipeds and millipeds made during the years 1928, 1929 and 1930 at various points in Costa Rica by Prof. M. Valerio of San José, Costa Rica, by whom they were transmitted to me for identification. I am much indebted to Prof. Valerio for the care with which he has brought this material together and for his courtesy in turning it over to me for study.

The types of the new forms are in the author's collection.

CHILOPODA

Oryidæ

1. Notiphilides maximiliani (Humbert and Saussure)

Notiphilus maximiliani Humbert and Saussure, Rev. et Mag. Zool., 1870, sec. 2, vol. 22, p. 205.

Locality: San José. One specimen taken June 17, 1928. Previous Central American records are San Mateo in Costa Rica and Guatemala.

Chilenophilidæ

2. Suturodes tardus Chamberlin

Proc. U. S. Nat. Mus. 1922, vol. 60, art. 7, p. 14, pl. 2, fig. 5, pl. 3, figs. 2-4, and pl. 4 figs. 3-4.

Locality: Cervantes. One specimen taken June 20, 1929. Previously known from San Juan Pueblo in Honduras.

Cryptopidæ

3. Otocryptops ferrugineus (Linnæus)

Scolopendra ferruginea Linn, Syst. Nat., ed. 12, p. 406, 1767.

Locality: La Caja, San José. One specimen taken by M. Valerio Dec. 13, 1929. Not previously recorded from Costa Rica.

4. Otocryptops melanostomus (Newport)

Scolopocryptops melanostomus Newport, Trans. Linn. Soc., 1845, vol. 19, p. 406.

Locality: Parismina. One adult specimen taken in 1929. Also two immature specimens from San José. Previously known in Central America from various points in Costa Rica, Guatemala, Honduras, and Nicaragua.

OTOSTIGMIDÆ

5. OTOSTIGMUS SCABRICAUDUS (Humbert and Saussure)

Branchiostoma scabricauda Humbert & Saussure, Rev. et Mag. Zool., 1870, vol. 22, p. 203.

Locality: Costa Rica: San Isidro Coronado. One specimen taken May 4, 1929. This specimen lacks the anal legs and most of the anal segment, but seems, as judged from other parts, to be the species which was previously recorded from San Mateo and Cocos, Costa Rica. It also occurs in Brazil and Columbia.

SCOLOPENDRIDÆ

6. SCOLOPENDRA VIRIDIS Say

Proc. Acad. Nat. Sci. Phil., 1821, p. 110.

Locality: Costa Rica: Salinas; San José. One specimen from each place taken by M. Valerio in 1929. This species is common from the southeastern United States to Central America. It was previously recorded in Costa Rica from Juan Viñas (P. P. Calvert) and Caché.

GOSIBIIDÆ

Gallitobius Chamberlin, new genus

A genus of the family Gosibiidæ related to Arenobius and Mexicobius. From the former it differs in having the antennæ composed of numerous articles (in the genotype above 40) instead of being composed constantly of 20, and also in having the prosternal teeth numerous (e.g., 4+4 and 6+6) instead of 2+2; the ectal spine dentiform, very small. Margin of head not broken or interrupted. From Mexicobius it differs also in having the numerous prosternal teeth. The ninth, eleventh and thirteenth dorsal plates with posterior angles produced. Male not known.

Genotype. G. ethophor Chamberlin, new species.

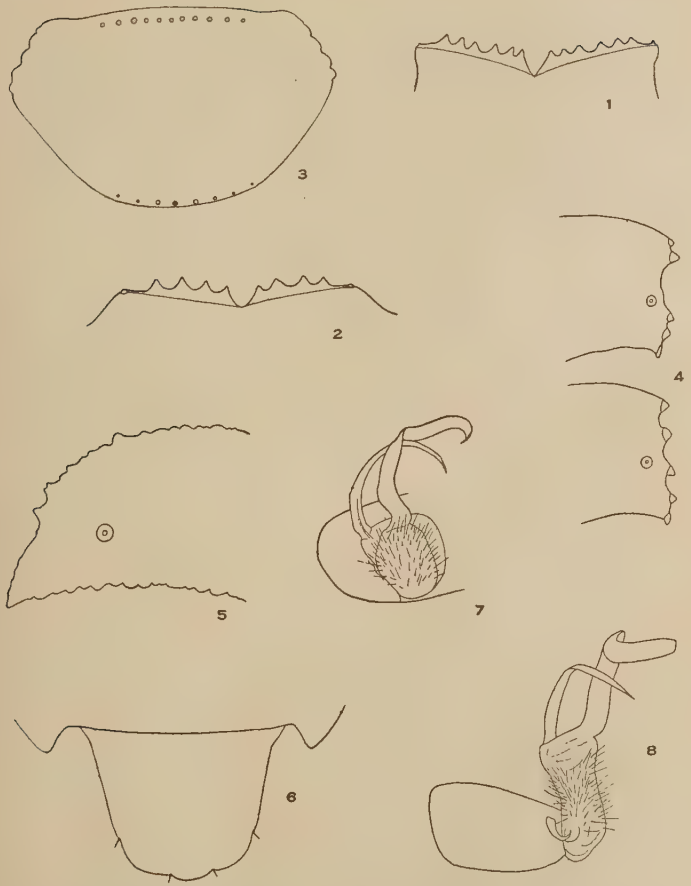
7. Gallitobius ethophor Chamberlin, n. sp.

Dorsum in general chestnut in color with a partly obscure median longitudinal darker stripe. Antennæ chestnut brown. Legs yellowish or somewhat brownish yellow, the posterior pairs darker.

Antennæ long; in the holotype composed of thirty-nine articles. Ocelli arranged in three series; e.g., 1 + 3,3,2; the single ocellus large, contiguous with the group, the first ocellus of the top series also notably enlarged.

Prosternum with anterior margin on each side nearly straight, transverse; teeth rather small, dark, in number 4 + 4; the ectal spine dentiform but low and almost obsolete, in line with the teeth.

(See page 13, fig. 2.)



1, *Gallitobius ricanus*, n. sp., anterior border of prosternum showing teeth; 2, *Gallitobius ethophor*, n. sp., anterior prosternal margin and teeth; 3, *Nyssodesmus valerii*, n. sp., collum in outline; 4, same, fourth and fifth keels; 5, *Nyssodesmus albomarginis*, n. sp., fifteenth keel in outline; 6, *Seminellogon chitarianus*, n. sp., anal tergite; 7, same, right gonopod of male, subventral view; 8, same, left gonopod, mesal view.

Coxal pores from circular to a little transversely elliptic, arranged thus: 7,6,6,6.

Anal legs armed below with 0,1,3,3,2 spines, above with 1,0,3,1,0; claws 2; coxa also armed laterally. Penult legs armed ventrally with 0,1,3,3,2 spines and dorsally with 0,0,3,2,0; claws 2; coxa apparently unspined. First legs bearing below 0,0,2,1,0 or 0,0,2,0,0 spines the inner (mesal) spine of the third joint very small.

Gonopods of the female with basal joint excavated within as usual; basal spines 3 + 3; claw strictly entire.

Length 26 mm.

Locality: El Gallito. One female taken Dec. 30, 1927.

8. Gallitobius ricanus Chamberlin, n. sp.

A much darker species than *G. ethophor*, the dorsum being a dark mahogany.

Antennæ composed of 43 - 44 articles. Lateral margin of head smooth without interruptions. Ocelli nine in number, arranged as follows: 1 + 2,2,3,1; the single ocellus very large and the caudal ocellus of top series almost as large, while the ocelli of the bottom series are very small.

Prosternal teeth 6 + 6. The ectal spine dentiform and much reduced or obsolete. (See page 13, fig. 1.)

Gonopods of female with basal joint strongly chitinized and excavated within at base. Basal spines 2 + 2. Claw entire.

Anal legs slender, bearing ventrally 0,1,3,3,2 spines and terminating in two claws. No spines detected on posterior coxæ but the poor condition of the type specimen renders full certainty as to this impossible.

Posterior angles of the ninth, eleventh and thirteenth dorsal plates produced strongly, those of the seventh also a little angularly produced. Surface of tergites strongly rugose.

Coxal pores circular, in a single series.

Length 22 mm.

Locality: El Gallito. One female in poor condition taken by M. Valerio, date not given.

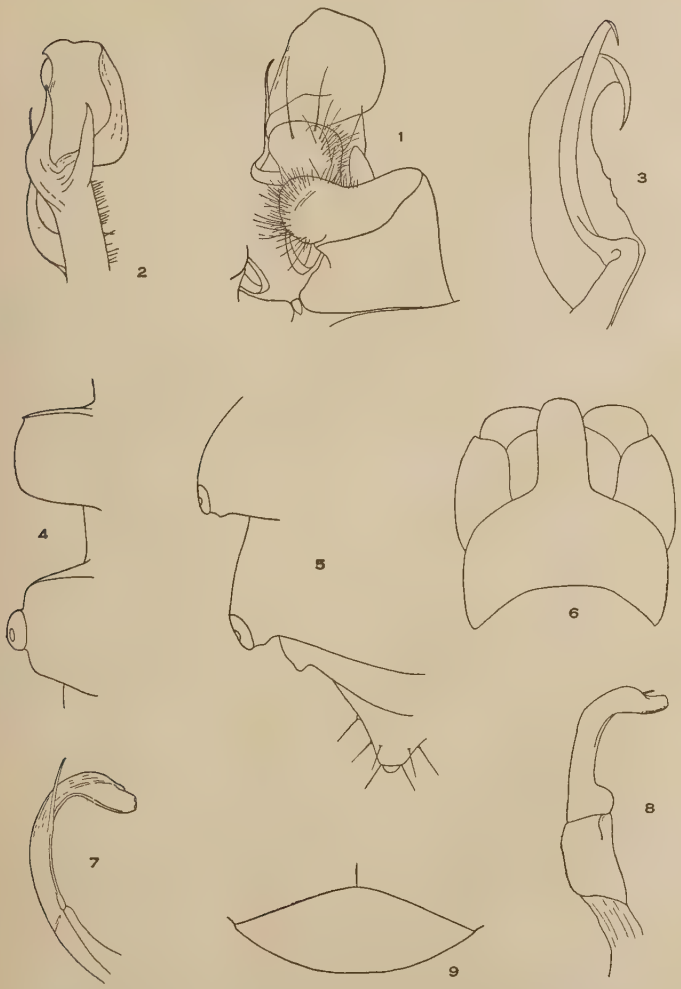
This species differs from *G. ethophor* especially in the more numerous prosternal teeth and in having the basal spines of the female genital forceps 2 + 2 instead of 3 + 3. It is a much darker species and has the posterior angles of the seventh tergite a little acutely produced which in *G. ethophor* is not the case.

DIPLOPODA

Platyrrhacidæ

9. Nyssodesmus bivirgatus (Carl)

Platyrrhacus bivirgatus Carl, Rev. Suisse Zool., 1902, 10, p. 652, pl. 11, fig. 65.



1, *Ethophallus cervantes*, n. sp., right gonopod of male, anterior view; 2, telopodite of left gonopod, caudal view; 3, *Chondrodesmus falciphallus*, n. sp., left gonopod of male, caudal view; 4, *Chondrodesmus euliotus*, n. sp., fourth and fifth keels; 5, same, posterior keels and anal tergite; 6, *Rhinocricus pygmoides*, n. sp., anterior gonopods, anterior view; 7, same, posterior gonopod, submedian view; 8, same, caudo-ectal face; 9, *Rhinocricus chitarianus*, n. sp., anal scale in outline.

Locality: Rio Jiminez. One broken specimen of small size taken Oct. 14, 1929. Previously taken in Costa Rica at San José (type locality), La Palma and Carrillo.

10. NYSSODESMUS sp.

Locality: El Gallito. One immature male taken Feb. 1, 1929.

11. **Nyssodesmus valerii** Chamberlin, n. sp.

The general color of the dorsum of this form is almost black, with the keels yellow excepting over base; lateral and ventral surfaces somewhat lighter, chocolate colored; legs and antennæ also chocolate brown.

Vertex of head bearing a seta each side of the well-developed median furrow; finely and evenly rugose except over clypeal region which is smooth. A series of seven short, spiniform setæ a little above lower median margin of labrum and two setæ at upper level of smooth area. Collum in outline as shown on page 13, fig. 3; its surface slightly roughened with densely arranged, but only little raised, smooth granules; a row of small tubercles across anterior border and a series of similar but more widely spaced tubercles along caudal border; two intermediate series of obsolete tubercles. The succeeding tergites with surface similar to that of collum, being vaguely roughened with smooth low granules visible only under the lens; a series of widely separated small tubercles revealed under the miscroscope along caudal border; the other series obsolete or absent. Keels somewhat longer antero-posteriorly than wide, with the general lateral margin parallel with axis of body and both corners well developed; anterior margin convex, the posterior margin concave, with the caudolateral corner acutely but only moderately produced; lateral margin of keels with four or five teeth, these on some of the porigerous keels separated into two groups by a wider, tooth-free, space or diastema. Pore far outside middle of keel, removed from lateral margin between teeth by from once to once and a half its diameter (inclusive of rim). (See page 13, fig. 4.)

Anal tergite comparatively short, semicircular, with sides at base straight for a short distance; surface nearly smooth excepting for the usual series of setæ. Anal valves and last sternite of the usual form, with setæ typical, the surface only very finely roughened.

Length of female (holotype), about 63 mm.; width, 12 mm.

Locality: La Palma, one female (holotype) collected Jan. 5, 1928, and La Carpintera, also one female taken Mar. 10, 1929.

12. **Nyssodesmus albomarginis** Chamberlin, n. sp.

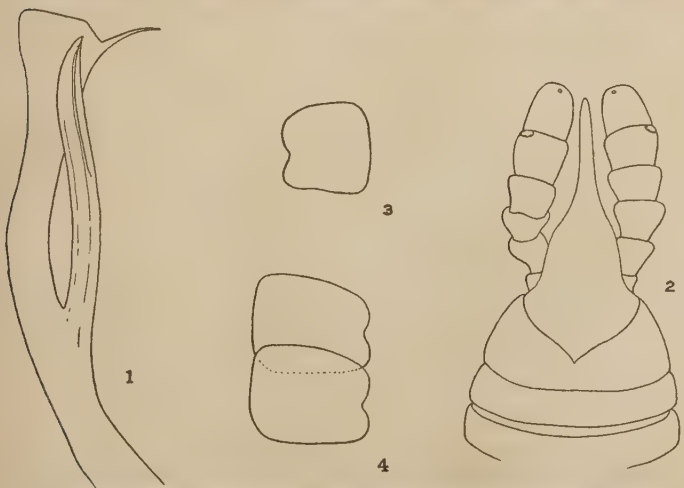
A species readily distinguishable from others of the region in having the keels bordered all the way around with white; the major tubercles across the posterior and the smaller ones of the

two more anterior rows also white; the collum white about the margins of the keels, with tubercles of anterior and posterior borders and of two intermediate rows also white; excepting for these white portions the body, together with legs and antennæ, is dark chocolate brown.

Head densely granular above becoming smooth in and toward labral region.

Tergites also with metazonites all densely finely granular, the prozonites smooth. Collum bearing a series of large tubercles, which tend to be divided, along caudal border and a series also along the anterior border, the tubercles of the two intermediate series smaller; a broad depression caudad of the anterior series, this depression extended caudad at middle. Antero-posterior length of keels much less than the width; anterior and lateral margins forming together an even convex curve; the caudal margin concave and meeting the lateral margin at an acute, projecting angle. The pore located outside the middle of keel, about one-third or a little more the distance from outer margin to base.

Anal tergite subquadrate, the sides straight and the caudal margin convex, with an indentation each side toward the well rounded corner; a series of four tubercles in a series a little in front of caudal border. Anal sternite convexly elevated anteriorly, subtrapeziform in outline; the caudal margin bearing the usual two



1, *Rhinocricus chitarianus*, n. sp., telopodite of gonopod of male, distal portion much enlarged; 2, *Siphonophora valerii*, n. sp., head and first segments, dorsal view, in outline; 3, same, pleurite of anterior region; 4, same, two pleurites of posterior region.

conspicuous setrigerous tubercles between which the margin is straight. Anal valves sharply margined mesally, the elevated border smooth; also sharply furrowed within lateral margin, this margin and furrow straight.

Length of female (holotype), about 78 mm.; width, 16 mm.

Locality: La Palma. One female taken by M. Valerio Jan. 15, 1929.

EURYURIDÆ

13. AMPLINUS CONVEXUS (Carl)

Pachyurus convexus Carl, Rev. Suisse Zool., 1902, vol. 10, p. 633, pl. 11, fig. 57.

Locality: Parismina. One specimen taken July 26, 1928. Previously taken in Costa Rica but recorded without more definite locality.

14. AMPLINUS, sp. a.

Locality: Parismina. Two females taken July 26, 1928. These specimens are of a species notably smaller than *A. convexus*, but in the absence of males it seems unwise to describe them.

15. AMPLINUS, sp. b.

Locality: Turrialba. One female taken June 24, 1928. Larger than the preceding form. Species doubtful.

16. APHELIDESMUS CALVERTI Chamberlin

Trans. Am. Ent. Soc., 1914, 40, p. 191, pl. 2, figs. 6-8.

Locality: Parismina. One male and two females taken Feb. 26, 1928. Originally described from La Emilia (P. P. Calvert coll.).

17. APHELIDESMUS INTERMEDIUS Chamberlin

Trans. Am. Ent. Soc., 1914, 40, p. 192.

Locality: San José. One male. The holotype, a female, was taken at La Emilia in 1909-1910 by Dr. P. P. Calvert.

18. POLYLEPISCUS sp.

Locality: Parismina. One female taken July 26, 1928.

SEMINELLOGON Chamberlin, new genus

A genus related to *Aphelidesmus* but differing in having the telopodite of the male gonopods less complicated; the seminal style free, not accompanied by a sheath; principal lamina typically angularly bent distad of middle, the distal portion cycle-shaped and nearly at right angles to the basal portion. Dorsal plates wholly without tubercles or roughening; carinæ with lateral mar-

gins smooth, thickened, especially about the sunken pores. Last sternite (anal scale) semi-circular.

Genotype: *S. chitarianus* Chamberlin, new species.

19. Seminellogon chitarianus Chamberlin, n. sp.

Dorsum laterally brown with a conspicuous broad yellow median stripe over the entire length, the stripe constricted between prozonite and metazonite on each segment, the brown at that level sometimes extending entirely across dorsum in a narrow band. Keels also yellow over caudo-lateral portion. Caudal tergite yellow. Head brown, with antennæ yellow. Lateral and ventral regions and legs yellow.

Collum with keel evenly bent down as in species of *Aphelidesmus*, its anterior corners rounded, the posterior corners subrectangular, narrowly rounded, not at all produced. Keels of the second tergite extending laterally a little beyond those of the collum. Posterior angles of the succeeding keels becoming gradually more produced in going caudad. Posterior keels less extended, as usual in *Aphelidesmus*, etc. Margin of keels in general wholly smooth. Anal tergite as shown on page 13, fig. 6.

The gonopods of the male have the coxæ well separated; between the coxæ posteriorly a median sternal plate which is widest across its anterior edge and is short antero-posteriorly. For details see page 13, figs. 7, 8.

Length of male holotype, about 43 mm.; greatest width, 7 mm. Length of female, 58 mm.; width, 10 mm.

Locality: Chitaria. One male (holotype) taken Sept. 6, 1929, and one female taken at same place Mar. 15, 1930.

Strongylosomidæ

20. Oxidus gracilis (Koch)

Fontaria gracilis C. Koch, Syst.d. Myr., 1847, p. 142.

Locality: San José. A male and a female taken by M. Valerio.

This is now a tropicopolitan species also familiar in the hothouses of temperate regions and hence sometimes spoken of as "the hothouse milliped." It was previously reported by the author from San José and is probably well established there.

Leptodesmidæ

Ethophallus Chamberlin, new genus

A genus related to Chondrodesmus but differing especially in the more complicated gonopods. In these the coxæ of the two are firmly coalesced at the middle line; each coxa bearing on mesal side distally an uncate process the point of which extends into an excavation in base of the femur, the coxa also bearing a straight

subconical process above extending forward against outer side of base of femur; telopodite at right angle to coxa, the femur bearing a blade arising near base on mesal side and followed distally by a conspicuously expanded laminate portion and two acuminate processes. Legs with terminal segment long and slender, not supported beneath by a pad from metatarsus. Second keel on a level with the following ones. Tergites with transverse sulcus weak. Last tergite pointed. Repugnatorial pores on segments 5,7,9,10,12,13,15-19.

Genotype: *E. cervantes* Chamberlin, new species.

21. Ethophallus cervantes Chamberlin, n. sp.

General color above dark brown excepting the caudal processes of the keels and a band across caudal border of each metazonite where the color is yellow. Sides of body a lighter brown. Ventral region and the legs yellowish. Head dark brown above, in front below level of antennæ paler, the labral region yellow; antennæ brown proximally, the last two joints yellowish.

Collum with anterior and lateral margins together forming a semicircle, but with anterior median portion a little less convex; keels well developed, only moderately depressed; caudal margin somewhat arcuate, caudo-lateral angle a little extended and a little less than rectangular. Keels of succeeding tergites well developed, nearly horizontal; on segments behind the second caudal angles become successively more acute and more strongly produced, those of the most posterior segments long and slenderly acute. The metazonites a little depressed or weakly sulcate transversely a short distance behind the middle, smooth; anterior corners of keels rounded, the margin just behind each corner presenting a minute tooth as shown in the figures.

Anal tergite acutely narrowed to a narrowly truncate point caudally, the apical portion a little depressed, a transverse series of three or four setæ across base of depressed tip, one on each side projecting from a tubercle conspicuously caudo-laterad, and the tip also bearing four setæ from its caudal surface. Anal scale semicircular, bearing a conspicuous seta each side of middle, this seta arising from a submarginal tubercle. Anal valves narrowly margined along mesal edge, and each bearing two long submarginal setæ.

The characteristics of the male gonopods as shown in the accompanying figures.

Length of a male paratype, about 15 mm.; width, 2 mm.

Locality: Cervantes. Two complete males and the posterior portion of two other specimens taken June 30, 1928.

22. Chondrodesmus falciphallus Chamberlin, n. sp.

Dorsum a light chocolate brown with the keels and the distal part of anal tergite abruptly lighter; there is also a rather vague

trace of a lighter median longitudinal line. Legs and antennæ yellow.

Head smooth and shining.

Collum with posterior margin strongly bowed forward on each side; anterior margin straight over middle region and curving evenly about the anterior corner of the keel at each side, the caudal margin meeting the lateral in a slightly acute angle which is a little produced caudad; depressed transversely in a broad shallow furrow in front of the middle; narrowly margined all the way around. Surface of tergites in general moderately roughened, distinctly granulose, with the typical rows of small tubercles obsolete or nearly so. Anterior corners of keels well rounded, the posterior corners produced caudad in a short dentiform process; beginning with fourth keel the caudal margin presents a single submedian tooth or, on more posterior keels, two or three teeth as shown in the figures. Keels sharply margined, the edges smooth excepting for the caudal teeth and on porigerous keels a slight indentation in front of the pore body. Nineteenth segment and its keels greatly reduced.

Sternites with a low tuberculiform prominence at base of each leg. Anal sternite acutely produced between the two caudal setigerous tubercles.

Gonopods of the male as represented on page 15, fig. 3.

Length about 50 mm.; width 9 mm.

Locality: Parismina. One male taken Feb. 26, 1928.

This species is readily distinguishable from other species in the form of its gonopods; e.g., by the acutely prolonged apical portion of both blades of the telopodite.

23. **Chondrodesmus euliotus** Chamberlin, new species

Dorsum light chestnut, the keels, excepting at base, yellow and an obscure and partly discontinuous median longitudinal line also yellowish; sides light chestnut, the venter pale.

In size, coloration and general appearance suggesting *C. singularis* Chamberlin but differing in the characteristics of the keels. The fifth keel does not have its anterior corner shouldered out beyond the level of the porigerous prominence, and the posterior keels on caudal margin have a dentiform projection which is lacking in *singularis*. The details of form are as represented on page 15, figs. 4, 5. The metazonites smooth and shining excepting across caudal portion where weakly roughened; prozonites smooth.

Anal sternite triangularly produced between the setigerous tubercles, the caudal angle narrowly rounded.

Length about 30 mm.; width 4.8 mm.

Locality: Chitaria. Two females taken Mar. 14, 1931.

RHACODESMIDÆ

24. ACERATOPHYLLUS UNICOLOR Carl

Carl, Rev. Suisse Zool., 1902, 10, p. 609, pl. 12, figs. 35, 36.

Brolemann, Ann. Soc. Ent. France, 1905, 74, p. 345, pl. 8, figs. 6, 7.

Locality: El Gallito. One male taken Feb. 1, 1929. The specimen is a somewhat smaller individual than Carl's type, having a width of 5 mm. as against 5.5 mm. The gonopods, however, correspond in detail.

25. ACERATOPHYLLUS LAMELLIFER Brolemann

A. unicolor lamellifer Brolemann, Bull. Soc. Ent. de France, 1905, p. 346, pl. 8, figs. 1-5.

Localities: Chitaria, one male taken Mar. 14, 1930; and Parismina, two females taken in 1929. Previously known from San José.

RHINOCRICIDÆ

26. Rhinocricus pygmoides Chamberlin, n. sp.

Dark brown to blackish, the clypeal region lighter; legs fulvous.

Head smooth and shining. Sulcus continuous across vertex, interrupted in frontal region, more deeply impressed across clypeus. Antennæ with the usual four terminal sensory cones.

Collum narrowly margined about antero-ventral border; a horizontal stria at level of each eye extending from anterior margin nearly to middle of plate. Segments weakly constricted, the sulcus deeply impressed along anterior border of the depression and in front of level of pore, to embrace which it curves back abruptly. Each scobina consisting of a deeply impressed lunate pit at the margin of the tergite followed by a posteriorly pointed area of fine striæ; each pair of scobinæ separated by a distance of from once and a half to twice the length of a scobina; present caudad to about the thirty-fourth segment.

Anal tergite rounded behind; exceeded by the valves. Valves slightly compressed but not margined. Anal scale caudally rounded.

In the gonopods the lamellate division of the telopodite is narrowly clavate and distally a little narrowed, the style evenly curving away from the lamina on its mesal side. (See page 15, figs. 6, 7, 8.) Number of segments 45.

Width 3 mm.

Locality: Parismina. Several specimens, including one adult male (holotype), taken 26 Feb., 1928. Notably smaller than other Central American species with the exception of *R. ocraceus* Brolemann, of Panama. The latter species is separated at once by the presence on each anal valve of a caudal process. (Oxypyge ?).

27. Rhinocricus chitarianus Chamberlin, n. sp.

Segments dark olive in front of the segmental sulcus and mostly also a little distance back of it, the segments behind each dark olive area deep red. Head and antennæ somewhat ferruginous as is also the collum excepting its dark anterior and posterior borders. Legs light olive brown. Anal tergite light olive with caudal border reddish, the anal valves similar, with mesal border reddish, the anal scale also light olive with caudal border reddish.

Head smooth and shining, the sulcus distinct but interrupted in the frontal region. Antennæ with sixth joint large and the last bearing the usual four cones.

Collum with a fine margining sulcus about the anterior corner; surface smooth and shining, but with some coriarious impressions, especially on each side at and below the level of the eye. Second tergite extending much below level of the collum, the lower end triangular, the sulcus fine and obscure dorsally. Sulci on the following segments complete, narrowly excurved opposite the pore. Tergite smooth and shining, striate only below.

Scobina obscure on eighth segment but distinctly developed from the ninth segment caudad; anterior impression deep, transversely elliptic, widely separated; the posterior striate area pointed behind.

Anal tergite bluntly rounded behind; much exceeded by the valves; two transverse shallow furrows between middle and caudal end. Anal sternite very wide, the caudal margin convex, differing in this conspicuously from *R. simulans*, a closely related species. (Page 15, fig. 9.)

Gonopods of the male somewhat resembling those of *R. simulans*, but the spine of the broader blade of telopodite longer and the blade itself differently formed, while the style is broader and distally less narrowed. See, further, page 17, fig. 1. Number of segments, 45.

Length 92 mm.; diameter at middle 11 mm.

Locality: Chitaria. One male taken Mar. 15, 1930.

28. Rhinocricus sp.

Locality: Chitaria. One female taken June 9, 1929. A very large specimen in poor condition which it seems difficult to place accurately in the absence of the male.

Spirostreptidæ

29. Orthoporus absconsus Chamberlin

Proc. U. S. Nat. Mus., 1922, 60, Art. 8, p. 15.

Locality: San José. One female taken in 1929. Previously known from a male taken at Domingo de San Mateo.

30. ORTHOPORUS sp.

Locality: San José. One female of uncertain species taken June 1, 1929.

31. DIAPORUS OMALOPYGE (Brolemann)

Spirostreptus (*Scaphiostreptus*) *omalopyge* Brolemann, Ann. Soc. Ent. France, 1905, 74, p. 365, pl. 9, fig. 10.

Diaporus omalopyge Chamberlin, Proc. U. S. Nat. Mus. 1922, 60, Art. 8, p. 19.

Locality: El Gallito. Two females, apparently this species, taken in 1929. Previously known from La Palma, Carillo and Caché.

32. DIAPORUS sp.

Locality: Cervantes. One female of uncertain species taken June 30, 1928.

SIPHONOPHORIDÆ

33. **Siphonophora valerii** Chamberlin, n. sp.

Dark brown with the head typically lighter, yellow; antennæ and legs also yellowish.

Head narrow, widest at base and narrowing continuously to the beak which it about equals in length. The beak slenderly pointed, slightly curved, exceeded by the antennæ but reaching beyond middle of sixth article of the latter. Antennæ heavy and conspicuously clavately thickened from the base distad. (See page 17, fig. 2.)

Collum widely angularly excised in front; sides converging forward. Pleurites of anterior and posterior regions as shown on page 17, figs. 3, 4. Number of segments, 82-83.

Length about 20-22 mm.; width 1.3 mm.

Locality: Pavas. Three females taken June 1, 1929.

EDITORIAL NOTICE

Beginning with this issue the volumes of the Pan-Pacific Entomologist will run concurrently with the calendar year. It is hoped that the convenience for bibliographical purposes of this change in dating will in a measure recompense our subscribers for the long interval between the last issues. Those subscribers who have paid for the calendar year 1932 will be credited with six months' subscription on volume nine for 1933. Our treasurer has obtained more favorable terms for printing which, with the loyal support of our subscribers, should make it possible for this journal to appear regularly and promptly in the future.—E. P. Van Duzee.

BEES COLLECTED AT BOREGO, CALIFORNIA, BY WILMATTE P. COCKERELL AND MILENE PORTER

BY T. D. A. COCKERELL

The following bees were collected at Borego, San Diego County, California, April 3, 1932.

Spinoliella puellæ Cockerell, n. sp.

Female (Type). Length about 9.5 mm.; black, the head and thorax with abundant long greyish white hair; head broad, wholly without light markings, clypeus and sides of vertex highly polished; eyes intense black; lower part of clypeus with scattered strong punctures; flagellum short and stout, ferruginous beneath except at base; a highly polished semicircular area in front of and surrounding middle ocellus, interrupted in middle anteriorly by a narrow sulcus; mesothorax polished, anteriorly with scattered delicate punctures; scutellum polished, with a shallow median sulcus; tegulæ brown; wings hyaline, a little dusky, stigma very dark reddish; basal nervure falling far short of nervulus; first recurrent nervure joining second cubital cell very near its base, second far from its apex; legs without light markings, tuft on hind knees pale reddish; first four tergites with entire canary-yellow bands, more or less narrowed in middle and broadly, shallowly emarginate posteriorly at sides; fifth tergite with a pair of transverse yellow marks, rounded in front, straight behind; apex with pale reddish brown hair; venter with transverse pallid depressions at the median bases of the sternites.

Male similar but narrower; clypeus all black, or with an inconspicuous median pale yellow line; lateral marks extending as a line along orbits up to level of antennæ, but at lower end broadened, with a hook-like extension; flagellum short, very obscurely reddish beneath; fifth tergite, in addition to the two transverse marks, having a little spot at each extreme side, or the fifth may have an entire band, extending to sides, or the lateral spots may be wanting.

The females had collected the very pale pollen from a species of evening primrose (Onagraceæ)[1]. The species is easily known among those with black face in female, by the entire bright yellow abdominal bands and rather large size. The labial palpi are of moderate length but much longer than in *S. comptula* Ckll. In *S. euxantha* Ckll. the labial palpi have the first joint enormously elongated, longer than the head, while the other three are very minute. *S. euxantha* (from Claremont, California) must

[1] Mr. Timberlake informs me that he also has taken *S. puellæ*. Those he found were on flowers of *Malacothrix californica*.

stand as the type of a new subgenus or genus Claremontiella.[2]

The name *S. puellæ* commemorates the very little girl who helped my wife to collect the specimens.

Hesperapis wilmattæ Cockerell, n. sp.

Female: Length nearly 8 mm., anterior wing slightly over 6; black, the sides of face, front, occiput and cheeks with long white hair; long white hair also on pleura and sides of metathorax, but mesothorax, which is minutely punctured and hardly shining, pruinose with excessively short thin hair, giving it a dusty appearance; the scutellum is similar, but with some longer hair; facial quadrangle about as broad as long, orbits somewhat converging below; clypeus convex, smooth and highly polished; supraclypeal area polished; flagellum short and thick, red beneath except at base; sides of front shining, but finely and closely punctured; area of metathorax large, entirely dull; apical truncation shining, with a very large and deep central pit; tegulæ small, testaceous; wings hyaline; stigma large, lanceolate, clear ferruginous, nervures fuscous; second cubital cell very long, receiving first recurrent nervure some distance from base, and second still more remote from apex; legs black, with middle and hind knees red; apical margin of hind tibiæ red; mid tibiæ densely covered on outer side with white hair, on inner side bare and polished; abdomen dull, extremely densely and minutely punctured, basal declivity of first tergite polished; second and following tergites with a thin very short covering of somewhat reddish hair; tergites 1 to 5 with broad dense white hair-bands; apical plate reddish, narrowing to a truncate, feebly emarginate, end; maxillary palpi six jointed, the last three of equal length, and only a little shorter than those before.

One specimen. Related to *H. fuchsi* (Vier.) in several respects, but smaller. The abdomen resembles that of *H. pellucida* Ckll. which, however, has a polished mesothorax. The thoracic pubescence recalls that of *H. elegantula* Ckll.

Osmia liogastra Cockerell, n. sp.

♀ Length hardly 7 mm., anterior wing hardly 5; robust with broad head, rather small thorax, and very broad and short abdomen; thorax and abdomen shining olive green, head darker and duller (very densely punctured), the lower part of the clypeus black; tegulæ very dark brown, not at all metallic; legs entirely black; ventral scopa black; pubescence white, very faintly yellowish on tubercles and thoracic dorsum; scattered long inconspicuous black hairs on the thorax above. Mandibles black, tridentate; clypeus simple, densely punctured, the apical margin shining, with the lateral angles prominent; hair at sides of face pure white, but

[2] For reasons given in Proc. Calif. Acad. Sci., XII (1923), p. 101, I do not think the name Nomadopsis Ashmead is available.

that on clypeus yellowish, contrasting; front with a median groove; flagellum short, dark red beneath except basally; third antennal joint nearly twice as long as fourth; area of metathorax moderately shining, at base with very fine plicæ and beyond with a miscroscopical cancellate sculpture; basal nervure meeting nervulus; first recurrent nervure as distant from base of second cubital cell as length of first intercubitus, but second recurrent scarcely half as far from end of cell; hair on inner side of hind basitarsi dark brown; abdomen shining, very finely punctured, with white hair at sides, on tergites 3 to 5 forming very thin imperfect bands.

One specimen. It is evidently polytropic as it has gathered three kinds of yellow pollen, two of Compositæ and the third (most abundant) I fail to recognize.

In the tables of Pacific Coast and Canadian Osmia by Miss Sandhouse and in my table of Rocky Mountain species, this runs persistently to *O. phaceliæ* Ckll. It is, however. much smaller and quite differently colored. I had to consider whether it could be the unknown female of *O. nemoris* Sandhouse, but the lack of metallic color on the tegulæ, and other characters, seem to make this improbable. The position of the recurrent nervures differs conspicuously from that of *O. nemoris*.

Megachile xerophila Cockerell, n. sp.

Female: Length about 10 mm., anterior wing a little over 6; black, robust, with large head and heart-shaped abdomen; pubescence rather abundant, erect, clear white, not mixed with black, but black on last two sternites or (on the second specimen) last sternite and apical part of penultimate one; mandibles with two large apical teeth, and a long oblique cutting edge, leading to the obtuse inner corner; clypeus prominent, the upper part convex, the lower middle flattened; the upper part very densely punctured and dull, the lower more shining, with the larger punctures more irregularly placed; lower margin simple; some red hairs from under side of mandibles; vertex dull and finely punctured; antennæ entirely black; third joint above one-fourth longer than fourth; mesothorax entirely dull, the sculpture consisting of a microscopical reticulation, on which are scattered shallow punctures, distant from each other about two punctures width; scutellum dull with indications of a shining median line; tegulæ very small, black with white hair in front; wings clear, very faintly dusky apically, nervures black; basal nervure falling considerably short of nervulus; second cubital cell receiving recurrent nervures close to, and about equally distant from, base and apex; legs black, with white hair on outer side, dark brown on inner side of front and hind basitarsi, but clear red on middle pair seen from in front;

spurs pale reddish; hind basitarsi rather broad, longer than the remaining joints together; abdomen shining, with five very distinct clear white hair-bands; sixth tergite straight in lateral profile, covered with a fine white pruinose pubescence; white hair of scopa very clear and bright.

Two specimens. Mitchell, in his recent table of neotropical *Megachile*, has used some characters not hitherto cited, so I thought it worth while to run our species through it. It comes out quite definitely at *M. affabilis* Mitch., differing by the lack of black hair on pleura. *M. affabilis* from Paraguay is really a quite different species. In my table of Lower California species (1924), *M. xerophila* runs straight to *M. vanduzeei* Ckll., and is quite without spots or bands of pubescence on the thorax above. *M. vanduzeei* has a similar aspect but is much larger, with a band of white pubescence in front of scutellum and quite different mandibles. The mandibles and sixth tergite exclude our species from a number of superficially similar small forms. One of the specimens was taken at evening primrose but had not collected pollen.

A Note on Andrena nudimediocornis Vier.

Andrena pallidiscopa trifasciata

Timberlake and Cockerell, n. subsp.

Andrena nudimediocornis Viereck, Cockerell, Pan-Pacific Entomologist, VIII (1932) p. 176.

The species described as *A. nudimediocornis*, from Gavilan, California, was considered by both of us to represent a new species, *A. trifasciata*. After the description was sent for publication, Timberlake borrowed paratype material of *A. nudimediocornis* Viereck, a species very briefly indicated, but not really described by Viereck in the Canadian Entomogolist XXXVI (1904) p. 227. Viereck's material was taken at Corvallis, Oregon in May and June, by Cordley. It appeared upon comparison, that in spite of some differences, this *A. nudimediocornis* was the same species as *A. trifasciata*, and accordingly Viereck's designation was substituted in proof.

We have now both examined the paratype of *A. nudimediocornis* in comparison with *A. trifasciata*, and conclude that the

latter should stand as a valid subspecies, the differential characters being constant and clearly discernible as follows:

nudimediocornis	*trifasciata*
Clypeus rather more shining, with a distinct median ridge	Clypeus dull, with the median ridge only feebly indicated on lower part
Tibial scopa dull white beneath	Tibial scopa black beneath
Caudal fimbria light reddish or more dusky	Caudal fimbria black or dark soot color
Venter of abdomen with much pale hair	Venter without any conspicuous pale hair
Stigma ferruginous	Stigma very dark brown
Nervures mostly pale reddish	Nervures dark

A. trifasciata is also perceptibly larger than the other. With all these differences, the two insects are nevertheless extremely alike, so that it is considered best to treat them as subspecific forms of a single species, until or unless the male of the Oregon insect should show structural differences.

Many years ago Viereck (in litt.) stated that *A. nudimediocornis* was identical with *A. pallidiscopa* Viereck, which is indicated higher up on the same page in the Canadian Entomologist, and was collected by Cordley at Corvallis, June 1. A specimen of *A. pallidiscopa*, determined by Viereck, is in the Cockerell collection. It is from Colorado, C. F. Baker, 1900, and is not to be separated from the paratype *A. nudimediocornis*. Hence the name *A. pallidiscopa* is to be used for the species.

Some of the characters of *A. pallidiscopa* appear to ally it with *A. sapellonis* Ckll. as given in the table. But *A. sapellonis* is very easily distinguished by the abundant long light hair on the thorax above, and the smaller, more tapering metathorax.

A. pallidiscopa has a dense tibial scopa, with coarsely branched hairs on outer side, and so falls in the subgenus *Pterandrena* Robertson, as Viereck indicated. In a manuscript key to *Pterandrena*, *trifasciata* falls next to *A. asteris* Rob., which it closely resembles in many respects, but it is easily distinguished by several obvious characters.—P. H. Timberlake and T. D. A. Cockerell.

THE MALE OF VANDUZEEINA SLEVINI USNG.

(Scutelleridæ, Hemiptera)

BY R. L. USINGER

In a previous paper[1] the author described *Vanduzeeina slevini* from a unique female. Since that time the male has been taken and is described below.

VANDUZEEINA SLEVINI Usinger

Male. Similar to the female in general appearance, vestiture long and fusco-testaceous, margins of the pronotum more nearly parallel than in *V. balli* Van D., eyes vertical and more narrowed than in *balli* and the legs more robust. Size much smaller than in the female, 4.7 mm.

Head similar to that of *balli*, very slightly more narrowed apically, tumid, the tylus distinctly surpassing the juga; eyes vertical, more narrowed than in *balli*. Pronotum transverse, distinctly less widened behind than in *balli*, lateral margins rather evenly arcuate throughout, in *balli* more rectilinear anteriorly and strongly arcuate posteriorly; calli slightly elevated, separated by a narrow smooth area from the rest of the pronotum which is more irregularly punctate than in *balli*; the transverse median depression, which apparently is found in all species of this genus and extends to the lateral flattened area, is less distinct than in *balli*. Scutellum much as in *balli* with the punctation scarcely less dense and more irregular, indistinct or wanting anteriorly and posteriorly. As the hemelytra are partially spread the connexivum is obscured but appears, through the membrane, to be unicolorous as contrasted with the distinctly alternated connexivum of *balli*. A long fusco-testaceous vestiture forming a rather dense covering on the dorsum. Vestiture sparse, white, fine, and long on the venter. Legs appearing more robust than in *balli*. Antennal characters, which differ in the females of the two species discussed here, are not present in the males, the fourth segment being distinctly longer (23:15) than the third in both species. Rostrum reaching posterior part of intermediate coxæ.

Color black, mottled with fusco-testaceous between the punctures behind the transverse depression on the middle of the pronotum, and on the scutellum except for a median triangular area at the base. Ventral surface black, more highly polished anteriorly than on the venter. Antennæ becoming fuscous apically. Tarsi fuscous.

Described from a single male taken by Lawrence W. Saylor at Santa Cruz, Calif. on August 1, 1931. The above specimen, which might be designated either as an allotype or a neallotype, is in the author's collection.

[1] Pan-Pac. Ent., VI, 3, Jan. 1930, p. 132.

A SHORT REVIEW OF DYSLOBUS LeCONTE, A GENUS OF BROAD-NOSED WEEVILS OF THE SUBFAMILY OTIORHYNCHINÆ WITH DESCRIPTIONS OF NEW SPECIES

BY EDWIN C. VAN DYKE
University of California, Berkeley, California

This paper was written primarily to assist certain field workers who wished to know what weevils they were dealing with and at the same time to straighten out the confusion that has existed for some time with regard to many of our species. In this work I have not only had the use of my own very large collection but the material of the California Academy of Sciences including the collection of my associate, Dr. F. E. Blaisdell, extensive series submitted by Mr. Wm. W. Baker and Mr. Joseph Wilcox of Puyallup, Washington, and the aid of Mr. L. L. Buchanan of the U. S. National Museum who has generously and painstakingly compared many of my specimens with the Casey and Pierce types. I am also under obligations to Dr. J. M. Aldrich and the U. S. National Museum for the loan of two paratypes.

Genus DYSLOBUS LeConte

The genus as used here includes not only *Dyslobus* LeConte, but *Amnesia* Horn, *Tricomigus* Horn and *Melamorphus* Horn. Pierce[1] united a portion of *Amnesia* with *Dyslobus* and the remainder with *Tricomigus* under *Melamorphus*... The species of *Amnesia* united under the last name are less differentiated from the more typical species united with *Dyslobus* than are these typical *Amnesia* from *Dyslobus*. That being the case it seems best to unite them all as a part of one great complex, as they are, under one name. They cannot be separated by any fundamental characters and their geographical distribution confirms their common relationship.

SYNOPTIC TABLE

1. Funicular segments elongate, always longer than broad, humeral angles well defined, larger species usually over 8 mm. in length.....2

   Only the first two or three funicular segments elongate, the remainder moniliform and generally broader than long.....11

[1] Miscellaneous Contributions to the knowledge of the weevils of the Families Attelabinæ and Brachyrhinidæ, by W. Dwight Pierce, Proc. U. S. Nat. Mus., vol. 45, 1913, pp. 382-389.

2. Pronotum more or less smooth and even, not granulate, elytral setæ not conspicuous, very little elevated (*Dyslobus s. str.*)..3
   Pronotum more or less uneven, verrucose or granulate, elytral intervals alternately more elevated, especially posteriorly....8
3. Elytral intervals not distinctly alternating in degree of convexity and without tubercles at summit of declivity, serial punctures squamigerous....4
   Elytral intervals generally alternating in degree of convexity posteriorly and with well marked tubercles at summit of declivity, serial punctures setigerous....7
4. Elytral declivity abrupt, almost straight and nearly vertical....5
   Elytral declivity gradually formed, the suture broadly and evenly arcuate from disk to apex of elytra....6
5. Color sombre, brown, more or less marbled with white, serial punctures of elytra of moderate size and moderately impressed, hind tibiæ very strongly bent near the apex in the male, length 9-15 mm.; average about 11 mm. The Sierra Nevada and N. Calif. to Crater Lake, Ore.....*segnis* (Lec.)
   Color more or less brilliantly metallic, the scales varying from silver gray to green, serial punctures of elytra coarse and deep, hind tibiæ only very feebly arcuate towards apex in male; length 11-15 mm. W. Wash. and N.W. Ore., especially near coast.....*lecontei* Csy.
6. Color light brown or chocolate brown, generally marbled with white, the scales submetallic, serial punctures of elytra fine and close together, the striæ better defined than in preceding species, hind tibiæ only very feebly arcuate towards apex in male; length 8-13 mm. High Cascades from middle Wash. to Mt. Hood, Ore.....*simplex* n. sp.
7. Color silver gray mottled with brown, serial punctures of elytra of moderate size and well spaced, the tubercles at summit of declivity variable in size, small and approximate to large and divergent, hind tibiæ quite strongly bent near apex in male; length 10-13 mm. N. Cascades from Mt. Hood, Ore. into Br. Col., Idaho and Yellowstone Pk.....*verrucifer* Csy.
8. Color gray and somewhat greenish, scales submetallic, pronotum more or less verrucose especially at sides, elytral punctures large, deep, well spaced and squamigerous, the elytral declivity abrupt and sutural prominence keeled, all tibiæ denticulate, the hind only feebly arcuate towards apex in male; length 10-12 mm. Coastal mountains of Humboldt Co., Calif.....*denticulatus* Pierce
   Color gray or brown, pronotum with distinct, well spaced granules, elytral punctures setigerous....9
9. Both sexes much alike, robust, granules rather fine and restricted to pronotum, humeral angles moderately prominent, surface of elytra even and uniformly and densely clothed with large scales, sutural prominence feeble, all

tibiæ denticulate; length 8-12 mm. W. Br. Col.; Wash., Ore., N.W. Calif. ..... *granicollis* (Lec.)

Sexes dissimilar, males narrower, with elytra little wider than prothorax, females about one-third wider, humeral angles very prominent 10

10. Color brown, granules coarse and scattered over elytra (finer) as well as pronotum, scales finer and not uniformly dispersed, vittately arranged on elytra, sutural prominence at summit of apical declivity very marked, odd intervals of elytra very much elevated, anterior tibiæ denticulate; length 9-12 mm. Coastal region of middle Calif., Sonoma to Santa Cruz Co. ..... *granicollis* subsp. *tumidus* Csy.

Color dull black, granules large and close together, practically restricted to pronotum, odd intervals of elytra but little elevated in front of declivity, the sutural prominence reduced, pile as well as scales, quite dense, the former erect; length 11.5-12 mm. Yorkville, Mendocino Co., Calif. ..... *granicollis vestitus* n. subsp.

11. Humeral angles more or less sharply defined 12

Humeral angles not sharply defined, the margin of elytra evenly rounding to base (*Melamorphus*) 21

12. Elytral intervals strongly alternating in degree of convexity, species rather small and elongate, the males in particular. 13

Elytral intervals slightly or not at all alternating in degree of convexity throughout their length, elytral suture not prominent or keeled near the summit of the declivity, serial punctures of elytra setigerous, species robust 15

13. Pronotum distinctly granulate (sometimes partly concealed by semierect scales) or verrucose and with more or less of a median sulcus 14

Pronotum with granules small at most, not more elevated than scales, the general surface irregularly impressed and with or without a faint longitudinal impression; humeral angles pronounced and somewhat auriculate, the scales metallic, green, golden or brown and laid flat, the setæ very short and much inclined, only evident upon good magnification, elytral punctures large and squamigerous; length 9-10 mm., N.W. Ore. near coast ..... *viridescens* n. sp.

14. Scales golden or cupreous, somewhat elongate and semierect; the setæ on head, pronotum and alternate elytral intervals very dense and semierect giving insect a shaggy appearance; pronotum with distinct yet sparse granules, longitudinally sulcate at middle and with shallow impressions on either side; elytra with prominent humeral angles, alternate intervals markedly elevated, declivity abrupt, serial punctures moderate in size and squamigerous; two small prosternal tubercles behind anterior legs; length 7.5 mm. Eureka, Calif. ..... *squamipunctatus* Pierce

Scales golden, broad, closely and densely applied to elytra, elsewhere sparse; the setæ short and much inclined, not particularly evident; pronotum verrucose and with distinct longitudinal sulcus; elytra with humeral angles well defined but not prominent, odd intervals well elevated, the striæ distinctly impressed with strial punctures large, deep, setigerous, declivity rounded, a faint prosternal tubercle behind forelegs; length 5-7 mm. Eastern part of Williamette Valley, Ore. ..... *wilcoxi* n. sp.

15. Pronotum distinctly rugose or verrucose, humeral angles more or less prominent 16

Pronotum quite smooth, punctured, but these concealed by overlying scales, humeral angles evident but not prominent 20

16. Alternate intervals of elytra not more evident than others, upper surface clothed in addition to scales with either long suberect pile or somewhat shorter much inclined setæ 17

Alternate intervals of elytra somewhat more prominent than others, especially posteriorly, the upper surface with setæ very short and as a rule only evident on declivity; prothorax much broader than long, general color brown more or less mottled with white, humeral angles prominent, striæ shallowly impressed and strial punctures moderate; length 6-9 mm. W. Br. Col. to N. Calif. ..... *decoratus* (Lec.)

17. Pile of upper surface long, fine and suberect 18

Pile of upper surface short, setigerous and much inclined 19

18. General color brown, dull, with sides of prothorax lighter and light patches near humeri and on apical declivity, pronotum distinctly rugose, or verrucose. Elytral striæ and strial punctures fine, pile of upper surface long, fine and quite erect, length 6-8 mm. E. Wash. and north central Oregon ..... *ursinus* (Horn)

General color brown or gray, light areas vague, pronotum verrucose, elytral striæ well impressed and punctures coarse and deeply impressed, pile of upper surface long, dense and erect; length 6-8 mm. Coastal area of middle Calif., San Francisco to Monterey ..... *raucus* (Horn)

19. Color dark brown, scales submetallic, lighter on alternate intervals, pronotum verrucose, elytral striæ fine, punctures coarse and deep; length 7 mm. Near Salt Lake City, Utah. ..... *tanneri* n. sp.

20. Color brown to gray with sides of prothorax and elytra somewhat gray and several gray patches at summit of elytral declivity, elytral striæ fine and punctures rather small, pile of upper surface long, fine and quite erect; length 7 mm. Foothills of Calaveras Co., Calif. ..... *blaisdelli* n. sp.

21. Color brown, reddish or gray 22

Color black 29

22. Pronotum smooth, the well developed punctures concealed by overlying scales, species robust.....27

Pronotum distinctly rugulose, granulate or verrucose.....23

23. Upper surface clothed with rather long, semierect pile.....24

Upper surface clothed with conspicuous but rather short setæ, the pronotum with low, flat granules having a small pit at apex, general form somewhat narrow and elongate, the scales submetallic and varying from golden brown to green, lighter along sides of prothorax and in patches scattered over elytra, the setæ short and much inclined on pronotum and disk of elytra, longer and semierect on declivity, serial punctures moderate in size and well impressed, striæ vague, two small tubercles on prosternum just behind and between forelegs; length 7-10 mm. Extreme coastal belt from Astoria, Ore. to Crescent City, Calif.....*bakeri* n. sp.

24. Species in general dark brown.....25

Species reddish brown, somewhat robust, the scales ochraceous, the pile moderately long and cinereous, sometimes lighter on alternate elytral intervals, the striæ with moderate, not densely placed punctures; length 7-7.5 mm. Mont., Col., E. Wash.....*luteus* (Horn)

25. Granules of prothorax close together, flattened and overlaid with scales. Species short and robust, dark brown, silvery at sides of prothorax, the elytral striæ finely, distinctly impressed and finely punctured, pile fine, long, dense and erect, scales of elytra so arranged as to give a granular appearance, the elytral declivity rather abrupt; length 8 mm. S. Ore., N. Calif.....*granulatus* Csy.

Granules of prothorax not overlaid with scales, and generally with well marked pit at apex, species more elongate and usually larger.....26

26. Color dark brown, scales more or less cupreous, pile fine, dense, of moderate length and semierect; prothorax rather suddenly constricted in front, pronotal granules, flattened, irregular and rather close together, the propleuræ very rugose, at times strigose; strial punctures of elytra coarse and deep, one-half width of intervals; length 6-9 mm. San Francisco bay region, Calif.....*deciduus* (Horn)

Color an earthy brown, scales dull, rarely metallic, pile fine, long and erect; prothorax gradually narrowed in front and behind, pronotal granules distinct, conical, shining, and well separated and extending down on to the propleuræ; strial punctures rather fine, never one-half width of intervals; length 8-11 mm. Alameda and other San Francisco bay counties, Calif.....*sordidus* (Horn)

27. General color dark brown, the prothorax with black vitta at center and along sides, silvery patches also along side margin of prothorax behind and on sides and declivity of elytra, a tessellated arrangement of the scales, darker and lighter, on alternate elytral intervals.....28

General color gray, somewhat vittate on prothorax as well as elytra, scales large and closely appressed, pile brown, moderately long, fine and semierect, elytral striæ well marked and with moderately large, rather closely placed punctures; length 5-8 mm. Mont., Alberta, E. Wash...*alternatus* (Horn)

28. Head clothed with short pile and long hair-like scales, the pronotum with elongate scales and the elytra with round, beadlike scales, the general pile brown or gray, of moderate length and somewhat inclined; length 6 mm. San Francisco, Calif.....*tessellatus* (Csy.)

Head, prothorax and elytra densely clothed with broad, flat scales, semierect on prothorax and elytra, the pile generally long, darker and more erect than in preceding, the elytral declivity more abrupt, otherwise very similar; length 6-8 mm. San Francisco, Calif. (a sand dweller).....*franciscanus* n. sp.

29. Species elongate, pronotum strongly granulate-tuberculate, the tubercles punctured.....30

Species less elongate, more robust, pronotum not strongly granulate-tuberculate, humeral angles small, but wider than prothorax at base, scales silvery, pile long, fine and black and white, appendages reddish, head and beak roughly punctate and tuberculate, strial punctures long, shallow and approximate; length 6.5 mm., width 2 mm. Riparia, Wash. .....*nigrescens* (Pierce)

30. Pile long, dense and black, scales black, humeral angles rectangular, broader than base of prothorax, appendage piceorufous, beak roughly sculptured, strial punctures of elytra large, deeply impressed and not closely placed; length 8 mm. Nevada.....*niger* (Horn)

Pile short and sparse on head and prothorax, absent on disk of elytra and of moderate length, setigerous and inclined on elytral declivity, scales black with a few patches of silvery ones on fifth interval posteriorly, appendages brown, beak coarsely punctured and finely carinate at middle, strial punctures of elytra large, deep, and rather closely placed; length 9.5 mm., breadth 4 mm. Kings River, Fresno Co., Calif., Alt. 5000 ft.....*dolorosus* n. sp.

Dyslobus segnis (LeConte)

This, the type species and one of the larger members of the genus, is always to be found in the coniferous forests of the

Sierra Nevada Mountains and those of northern California and north as far as Crater Lake, Oregon. It has a preference for the foliage of the true firs. Normally the pronotum is quite smooth though finely punctured and minutely granulate when abraded. In a specimen from the southern part of its range, Sequoia National Park, the pronotum is markedly granular tuberculate.

DYSLOBUS LECONTEI Casey

This species is large like the preceding but generally more elongate and proportionally narrower. It is a species of the more humid area of the Northwest.

Dyslobus simplex Van Dyke, new species

Rather large, moderately robust, black, densely clothed with golden brown or cupreous scales and very short, much inclined setæ on the rostrum and elytral declivity. Head rather finely, closely punctured, the punctures generally concealed by the scales; rostrum twice as long as broad, separated from front by a shallow transverse impression, broadly shallowly sulcate towards apex and with fine median carina; eyes much flattened, hardly projecting beyond sides of head, antennæ with scape reaching hind margin of eyes, funicle with first and second segments elongate, third to sixth much shorter and gradually diminishing in length though always longer than broad, seventh somewhat longer and broader than sixth, the club fusiform. Prothorax barely broader than long, with sides slightly arcuate, faintly constricted near apex, broadest in front of middle, the disk, like the head, rather finely, closely punctured but with sculpturing concealed by scales, postocular lobes but moderately developed and finely fimbriate. Elytra one-third longer than broad in male, slightly broader in female and in the latter broader than prothorax, humeral angles not well defined, sides of elytra arcuate to base, striæ fine, slightly impressed and with punctures of moderate size, approximate and each containing a small scale, intervals flat or barely convex and equally elevated, suture evenly arcuate from disk to apex of elytra and without keel at summit of declivity. Beneath regularly but not densely squamulose and finely pilose, first ventral segment sulcate at center, deeper in male, the fifth narrowly sulcate in male and subcarinate in female. Anterior tibiæ denticulate and arcuate towards apex, median simple and straight, hind tibiæ simple and feebly arcuate towards apex, all tibiæ mucronate. Length 11 mm., breadth 3.5 mm.

Holotype male (No. 3664), allotype female (No. 3665, Mus. Calif. Acad. Sci.) and several designated paratypes from a series of 170 specimens. The type locality is Homestead Inn,

Mt. Hood, Oregon, July 3, 1927, but I have also taken specimens on Mt. Adams, Wash., Hood River and The Dalles, Oregon, and have studied others from Easton, Wash., belonging to the Koebele Collection.

This species belongs near *segnis* but may readily be separated in general by its smaller size, brighter appearance, lack of well defined humeral angles, even curvature of elytra and but slightly angulated posterior tibiæ in males. It is also geographically isolated being a Cascade Mountain species while *segnis* is primarily a California mountain species. On Mt. Hood it is very common, being found upon almost every available tree or shrub, especially in old logged over areas.

Dyslobus verrucifer Casey

This large, distinctly gray, somewhat tessellated species with well marked tubercles at the summit of the apical declivity of the elytra, is quite northern in its distribution being found in the northern Cascades and northern Rocky Mountains. In the Cascades it is most frequent at high levels, chiefly in the forest of alpine hemlock not far below snow line but in Idaho and in Yellowstone Park it drops to lower altitudes. The tubercle is quite variable, small and single or large and double. *D. bituberculatus* Pierce is nothing but a form with larger tubercles. Mr. Buchanan has accurately compared some of my specimens with the type and verified my surmise.

Dyslobus denticulatus Pierce

This insect is quite similar to *lecontei* and in fact is a derivative of the same. Like it, it is a coastal species, has the serial punctures of the elytra coarse, giving lodgement to squamae and the scaly covering metallic and generally greenish. It is, however, readily separated by the more prominent humeral angles, more convex elytral intervals with a tendency to be alternately more evidently elevated, especially posteriorly, and the pronotum tuberculate, a character overlooked by Pierce. Collecting in intermediate territory may show that this species is but an extreme of *lecontei*.

Dyslobus granicollis (LeConte)

This species with its varieties is the most widely dispersed of the genus, ranging from western British Columbia as far south

as Monterey Bay, in California, in fact throughout most of the typical Vancouveran faunal region. In its typical form, it extends as far south as Humboldt County, California. From here south, it begins to break up into minor races, chiefly characterized by the males becoming more elongate; with the humeri more prominent, the elytral intervals alternately more elevated and tuberculate at the summit of the declivity and with as pronounced a development of the granules on the elytra as there is on the pronotum. *D. sculptilis* (Casey) and *discors* (Casey) are variants of such slightly differentiated features that they should be suppressed as synonymous. *D. debilis* (Casey) is but a depauperized, narrower variety. It simulates *tumida* but is smaller and lacks the elytral granules. *D. tumida* Casey is, however, a well defined extreme which because of great development of the elytral humeri, and alternate intervals, with tubercles at summit of declivity and elytral granules, should remain as a named subspecies. A second subspecies which will now be defined is also worthy of being designated.

Dyslobus granicollis vestitus Van Dyke, new subsp.

This subspecies is black or very dark brown, scales large and very dull as is the body color. It resembles the typical *granicollis* in having the granules confined to the prothorax, the alternate elytral intervals but little more elevated than the others, and the scales of the elytra densely placed. Its distinctive features other than color, are the coarsely and densely granulate prothorax, the granules almost twice as numerous as in typical forms, the great reduction of pronotal scales as a result; and the dense clothure of the upper surface with short, semierect black hair, the vestiture fully twice as abundant, more regular and more erect than in any of the other phases of the species. Male, length 11.5 mm., breadth 4.25; female, length 12 mm., breadth 5 mm.

Holotype male (No. 3666), allotype female (No. 3667), Mus. Calif. Acad. Sci.), and sixteen paratypes collected by Mr. E. R. Leach and Mr. E. P. Van Duzee at Yorkville, Mendocino Co., Calif., June 10, 1921, and various other dates. Most of the paratypes are now in the collections of Mr. E. C. Zimmerman and Mr. Leach through whose kindness I received several of my specimens.

Dyslobus viridescens Van Dyke, new species

Similar in form and general appearance to *granicollis* but generally smaller, with the majority of the scales proportionately smaller and somewhat green, the granules of prothorax much suppressed, rarely appearing above the general surface, the outer segments of the antennal funicle moniliform, not elongate, and the serial punctures of elytra brilliantly green and squamigerous. Head coarsely punctured, moderately clothed with elongate green scales; rostrum two and a half times as long as broad, rugose punctate, depressed and shallowly sulcate in front, and separated from head by a slight transverse impression; eyes flattened; antennal scape reaching hind margin of eyes, first and second funicular segments elongate, third slightly longer than broad, the club fusiform and twice as long as broad. Prothorax a bit broader than long with or without median sulcus and laterally irregularly impressed. Elytra two-fifths or over broader than long, the humeral angles well defined, somewhat auriculate, odd intervals well elevated. Beneath punctate granulate, the males with first abdominal segment slightly sulcate, the females with last segment obtusely carinate. Anterior tibiæ denticulate and strongly bent near apex. Length 9 mm., breadth 3.25 mm. in male and 4 mm. in female.

Holotype male (No. 3668), allotype female (No. 3669, Mus. Calif. Acad. Sci.) and four paratypes, the first three from Cannon Beach, Ore., June 12 and 15, 1923, the others from Olney (near Astoria), Ore., June 13-15, 1925. I have also closely associated with these, four other specimens, one from Cannon Beach, two from Olney and one from the Forks, Wash., July 3, 1920, collected by E. P. Van Duzee, which only differ from the preceding in having the squamæ in the serial punctures of the elytra, very narrow, practically setigerous.

This species belongs to a group of moderate sized species including besides the above, *squamipunctatus*, *wilcoxi*, and *bakeri*, all somewhat related to *granicollis*, in fact superficially very like the variety *debilis* Casey, of which this species is the closest relative, the others being more divergent.

Dyslobus wilcoxi Van Dyke, new species

Small, robust, piceous, elytra densely clothed with metallic golden brown scales, the remainder of insect somewhat sparsely clothed, the scales beneath slightly greenish, and with short, much inclined setæ. Head sparsely, shallowly punctured, the latter generally concealed beneath the squamæ; rostrum at least twice as long as broad, separated from head by a shallow transverse impression, shallowly sulcate in front and with a well defined median longitudinal carina; eyes much flattened, barely projecting beyond

side margins; antennal scape reaching hind margins of eyes, the first and second funicular segments elongate, the first the longer, the third to sixth short, moniliform, seventh slightly larger, the club fusiform, over twice as long as broad. Prothorax slightly broader than long, sides evenly arcuate from base to apex or barely constricted before apex, broadest at middle, disk regularly verrucose, each tubercle finely punctured at apex and with narrow and sharply defined median longitudinal impression, the postocular lobes well defined and fimbriate. Elytra less than twice as long as wide in male, and about one-fourth longer in female, distinctly broader than prothorax in both sexes, the humeral angles quite prominent, the sides of elytra sinuate before base as well as towards apex, the third, fifth and seventh intervals distinctly more elevated than the alternate ones in the males and slightly more elevated in the females, especially posteriorly, striæ slightly impressed and with moderately large punctures, each giving rise to a small seta. Beneath coarsely, rather closely punctured, ventral segment somewhat rugose, especially in males, the prosternum slightly tuberculate behind anterior legs. Males with first ventral segment shallowly sulcate and last ventral convex and often slightly impressed at apex, the females with first ventral non-sulcate and the last ventral obtusely carinate. Anterior tibiæ denticulate and slightly bent near apex. Length 7 mm., breadth 2.5 mm. in male and 3.25 in female.

Holotype male (No. 3670), allotype female (No. 3671), Mus. Calif. Acad. Sci., and several designated paratypes from a series of fifty-four specimens collected by J. Wilcox at Lacomb, Oregon, May 27, 1931, and June 7, 1929, mostly on strawberries. Most of the material remains in Mr. Wilcox's hands.

This is one of the smallest of our species and may generally be distinguished by its small size, rather uniform dull golden color above, regularly verrucose pronotum, prominent humeri and elevated alternate elytral intervals. From *bakeri* with which it might be confused, it can be separated by being in general slightly smaller, more uniformly colored, having prominent humeri and lacking the prosternal spine.

Dyslobus decoratus (LeConte)

This species might also be confused with small specimens of *granicollis*. Its distinctive features are that the pronotum is irregularly tubercular or verrucose with small punctures at the summits of the tubercles, not regularly studded with smooth granules as in *granicollis*, that the elytral intervals are less un-

equally developed and the underside more grossly punctured. It ranges from British Columbia south as far as Trinity Co., California and Plumas Co. in the Sierras. In a race collected at Silverton, Oregon, by Wilson and Mote, the pile is slightly longer and more evident than in normal forms.

Dyslobus raucus (Horn)

D. ciliatus Pierce is but a slightly larger phase of the above. Its range is continuous with *raucus* and it possesses no characters to differentiate it. Mr. Buchanan who has made careful comparisons for me, agrees with me entirely in reducing it to synonymy.

Dyslobus tanneri Van Dyke, new species

Of moderate size, robust, piceous, head and pronotum sparsely and elytra densely clothed with metallic scales, generally cupreous in color, and with short, fairly abundant much inclined pile. Head rather coarsely, closely punctured; rostrum twice as long as broad, feebly depressed in front, non-sulcate, with a fine longitudinal carina at middle, and separated from head by a shallow transverse impression; eyes much flattened, hardly projecting beyond side margins of head; the antennæ with scape reaching hind margin of eyes, first and second funicular segments elongate, the following moniliform with the seventh the largest, club fusiform. Prothorax distinctly broader than long, sides arcuate from base almost to apex where narrowly but defintely constricted, disk regularly rugosely tuberculate, postocular lobes poorly developed and finely fimbriate. Elytra not quite a third longer than broad and about the same degree broader than prothorax, the humeral angles prominent, the sides of elytra narrowed and sinuate just posteriorly, strial punctures rather large, well impressed and close together, each with a small seta, intervals all flattened. Beneath rather coarsely punctured, the last ventral bluntly carinate. All tibiæ denticulate within. Length 7.5 mm., breadth 3.5 mm.

Holotype (No. 3672, Mus. Calif. Acad. Sci.) a unique collected near Salt Lake, Utah, July, 1927.

This species is intermediate in character between *decoratus* and *ursinus* having rather rigid setæ like the former but fully twice as long and slightly prominent postocular lobes like the latter.

Dyslobus blaisdelli Van Dyke, new species

Rather small, somewhat elongate, piceous, upper surface densely clothed with brown or grayish scales and with moderately long, rather sparse, erect brown pile, a triangular patch of silvery scales

at sides of prothorax extending from middle to base, and silvery patches on the third, fifth and seventh elytral intervals at summit of declivity, the scales of the legs also a silver-green. Head coarsely punctured; the punctures concealed by overlying scales, rostrum twice as long as broad, separated from head by shallow transverse impression, depressed but not defintely sulcate at apex and with narrow and obscure median longitudinal carina; eyes much flattened, protruding but slightly beyond side margins of head; antennal scape reaching hind margin of eyes; first and second funicular segments moderately elongate, the following moniliform with the seventh slightly larger than the preceding, club fusiform and about twice as long as broad. Prothorax at least a fifth broader than long, sides narrowed anteriorly and posteriorly and but slightly arcuate at middle, disk rather coarsely closely punctured like head and with punctures concealed by the scales hence more or less smooth in general, the postocular lobes but poorly defined. Elytra two-fifths longer than broad and almost a third broader than prothorax in female, narrower in male, humeral angles distinct but not prominent, the sides of elytra slightly constricted and sinuate just back of angles, the striæ barely impressed and regular punctured with moderate sized punctures, each with a small seta, the intervals flat. Beneath rather coarsely punctured and also rugose behind, the males with first ventral barely sulcate and last ventral evenly convex, the female with first ventral non-sulcate and last ventral obtusely carinate. Anterior tibiæ distinctly denticulate in males, faintly so in females. Length 7 mm., breadth 2.75 mm. in males and 3 mm. in females.

Holotype male (No. 3673), Licking Fork, Tuolumne River, 2900-3100 feet, June; allotype female (No. 3674, Mus. Calif. Acad. Sci.), Mokelumne Hill, Tuolumne Co., Calif., June, and four paratypes, Davis Meadow, R. R. Flat, near Mokelumne Hill, 2800 feet, June, all collected by Dr. F. E. Blaisdell.

The main characteristics of this species are its sparse yet evident pilosity, smooth pronotum, and very slightly developed though distinct humeral angles.

Dyslobus bakeri Van Dyke, new species

Of moderate size, somewhat elongate, piceous, head and pronotum moderately and elytra densely clothed with variously colored metallic scales, golden, green, silver or brown, and moderately setose, the hairs short, black and much inclined. Head coarsely, closely punctured, the scales in most cases concealing the punctures; rostrum nearly three times as long as broad, separated from head by a shallow, transverse impression, depressed in front and coarsely strigose, with a fine, somewhat obscure median longitudinal carina; eyes rather flattened, projecting but little beyond side margin of head; antennal scape reaching hind margin of eyes,

first and second funicular segments elongate, the following moniliform with the seventh the largest, club fusiform and about twice as long as broad. Prothorax one-fifth broader than long, sides rather evenly arcuate from base to apex, disk coarsely, closely punctured with certain of the punctured areas elevated into pitted tubercles here and there over the surface, and in general with a well defined median longitudinal impression, also several shallow impressions at the sides or in front and back, the postocular lobes poorly developed. Elytra nearly a third longer than broad, one-sixth broader than prothorax in male and fully one-fourth broader in female, humeral angles poorly defined, sides of elytra arcuate to base, striæ hardly impressed but rather regularly and coarsely punctured, each puncture with a greenish metalic seta, the even intervals flat, the odd somewhat convex and generally more prominent especially toward apex. Beneath coarsely punctured, abdomen more or less rugose as well, the prosternum with a pronounced double tubercle posteriorly behind the anterior legs, the males with abdomen in front shallowly sulcate at middle and last ventral generally evenly convex, the females with last ventral obtusely carinate. Anterior tibiæ distinctly, middle and hind obscurely, denticulate, the anterior quite arcuate in front especially in males. Male, length 8 mm., breadth 3 mm.; female, length 9 mm., breadth 4 mm.

Holotype male (No. 3675), allotype female (No. 3676), Mus. Calif. Acad. Sci., and several designated paratypes from a series of over ninety specimens. The types were collected by myself at Marshfield, Ore., June 11 and 14th, 1914. Other specimens have been taken at Cannon Beach, Ore., June, 1927; Walport, Ore., June, 1923, (E. P. Van Duzee); Crescent City, Calif., June 21, 1922; Westport, Wash., Feb. 22, 1932, (W. W. Baker), and March 20, 1932, (J. Wilcox).

This very pretty, somewhat varicolored species seems to be restricted to the extreme coastal belt of Washington and Oregon, extending as far south as Crescent City, Calif. Its most distinctive character is the prosternal tubercle. It could only be confused with *wilcoxi*, or *viridescens* among northern species; the former, however, not only lacks the prosternal tubercle but possesses well defined humeral angles and has the scales of the upper surface of a uniform golden color. The latter also has well defined humeral angles and lacks the prosternal tubercle. The poorly defined humeral angles and elytra rounded at base will also assist in separating *bakeri* from other northern species, all of which have well developed, generally auriculate, humeral angles.

Dyslobus granulatus (Casey)

This species ranges throughout northeastern California, extending south along the Sierra foothills as far as Eldorado County, and overlaps into Oregon. The more northern forms are generally dark, with few silvery scales and rather long, fine pile. They link up in the north with *ursinus* (Horn), the latter having the humeral angles prominently developed. In the southern part of its range, in Placer and Eldorado counties, the specimens become lighter in color and more highly decorated, the silvery bands along the sides of prothorax and at the apex of the elytral declivity being quite conspicuous. The pile of these specimens is also generally shorter, sparser and more setose. This species may also become of some economic importance like some of its northern relatives. Mr. H. H. Keifer took one at Bowman, Placer Co., Aug. 23, 1931, on strawberry plants.

Dyslobus sordidus (Horn)

Dyslobus (*Amnesia*) *elongatus* (Horn) is the male of *sordidus*. As stated previously, field studies have definitely proven this.

Dyslobus franciscanus Van Dyke, new species

Small, robust, piceous, densely clothed above with very large, somewhat obliquely attached scales and moderately long, semierect black pile, the scales in general dark brown but with silvery scales forming a broken line at the sides of prothorax and spots at the sides of elytra and elytral declivity, and black scales arranged in the form of a median and lateral prothoracic stripes and small patches on the elytra chiefly about the elytral declivity. Head closely, coarsely punctured, the punctures concealed by the scales; rostrum two and a half times as long as broad, separated from head by a shallow transverse impression; somewhat flattened and depressed in front; eyes flattened, hardly projecting beyond side margin of head; antennal scape reaching hind margin of eyes, first and second funicular segments elongate, the following moniliform, club about twice as long as broad. Prothorax a bit broader than long, sides broadly arcuate posteriorly, somewhat less so anteriorly and convergent, disk smooth as a result of scaly covering but when denuded granulo-punctate, postocular lobes poorly defined. Elytra almost twice as long as wide in male and about one-third longer in female, somewhat wider than prothorax in males and a third wider in females, humeral angles poorly defined, the sides of elytra evenly rounded to base, striæ finely impressed and finely punctured, each with a minute white seta, the intervals flat. Beneath coarsely punctured and rugose, the first ventral segment

shallowly sulcate in male and the last ventral obtusely carinate in female. Front tibiæ finely denticulate. Male, length 6.5 mm., breadth 2.75 mm.; female, length 7 mm., breadth 3.5 mm.

Holotype male (No. 3677), allotype female (No. 3678), Mus. Calif. Acad. Sci., and several designated paratypes from a series of thirty specimens collected on the margins of the sand dunes near Daly City, a suburb adjacent to the Mission district of San Francisco, Calif., May 11, 1911.

This rather attractive species I at one time took to be *tessellatus* Casey but Mr. Buchanan after comparison pronounced it quite distinct. He has also succeeded in having the U. S. National Museum loan me a paratype in order that I might see the differences myself. At first sight the two appear to be the same species but upon high magnification, the scales of *tessellatus* are found to be narrow, small and flatly attached while in *franciscanus* they are large, broad and generally obliquely attached, giving the appearance of an animal with its fur rubbed the wrong way. It is strange that two such closely related yet very distinct species should be found so near to each other.

Dyslobus dolorosus Van Dyke, new species

Moderate in size, elongate, black, head and elytra densely clothed with moderate sized, closely attached very dark brown, almost black, scales, with here and there a few patches of silvery scales, chiefly on the fifth interval posteriorly, the pronotum with a few minute and scattered setæ and rostrum and elytral declivity with semierect setæ of moderate length, legs and underside clothed with rather fine brown hairs. Head coarsely, rather closely punctured, the punctures generally concealed by the scales; rostrum almost three times as long as broad, depressed and shallowly sulcate in front, coarsely rugosely punctate, a fine longitudinal carina at middle, and separated from head by a distinct impression: eyes flattened, hardly projecting beyond side margin of head; antennal scape reaching hind margin of eyes, first and second funicular segments elongate, the following moniliform and transverse, club fusiform and twice as long as wide. Prothorax about a fifth broader than long, sides arcuate, narrowed in front and faintly constricted before apex, disk coarsely, rugose and tuberculate, the tubercules here and there minutely punctured. Elytra slightly more than a third longer than broad and somewhat less than a third broader than prothorax, humeral angles vague, margins of elytra evenly rounded to base, striæ shallowly impressed but the punctures large, well spaced and deeply impressed, the intervals flat, declivity almost vertical but evenly arched at crest. Beneath coarsely, closely punc-

tured and rugose, the last ventral segment broadly, shallowly carinate. Length 9.5 mm., breadth 4.75 mm.

Holotype female (No. 3679), Mus. Calif. Acad. Sci., and one paratype female, collected by myself in the south fork of Kings River Canon, Fresno Co., Calif., altitude 5000 feet, July 4 and 6, 1910.

This almost black and greasy looking species belongs near *niger* (Horn) but the latter is densely clothed with long, black pile, has the humeral angles rectangular and the appendages piceo-rufous.

A PRACTICAL METHOD OF CONTROLLING DENDROCTONUS VALENS LEC.

BY ERIC WALTHER
Golden Gate Park, San Francisco

A recent outbreak of the Red Turpentine Beetle, in Golden Gate Park, of, at first, rather serious proportions, has now been brought under practically complete control. Aside from the usual measures of sanitation, etc., the following method of saving individual pines attacked was found to be highly effective. Essentially, this consisted of the injection into the beetle-burrows of Ethylene-dichloride, whose vapors are highly toxic to all stages of this beetle, equalling in this respect the dangerous and offensive Carbon-bisulphide. Previous to injecting the liquid, which was done by means of a one-ounce medical syringe, the rough, outer bark only was trimmed away with a cooper's adze. Incidentally this served to remove the exuded resin found at the entrance opening, which otherwise would soon stop up the tip of the nozzle. Subsequently all openings, entrance burrow, ventilating holes and all cracks, were stopped up with putty, so as to confine the toxic vapors.

An experience, now extending well over two years, shows, first, that the demonstrated efficiency of this method is over 95%, second, that absolutely no injury to the pines results from the treatments proper, and last, that this particular beetle-epidemic has been completely checked, almost in its inception.

We should be glad to furnish any further information desired, on request directed to us at above address, and expect to publish a more extended statement in the near future.

A NATURE BOOK FOR ENTOMOLOGISTS

Blatchley, W. S. In Days Agone. Notes on the Fauna and Flora of Subtropical Florida in the Days When Most of Its Area was a Primeval Wilderness. 12mo. The Nature Publishing Company, Indianapolis, Indiana. $2.00, postage extra.

It is not given to every entomologist to be both a field naturalist and a systematist. Rarely can one study the intimate life of the insect in the field and then experience the joys of the "closet naturalist", as the systematist has often been called, as he investigates the morphological characters of his insects and places them in their proper relationship with allied forms. To Professor Blatchley was given this favor and how well he has improved his opportunities we can learn by reading this most interesting account of four collecting trips he has taken through Florida.

In speaking of the field naturalist I refer only to what Professor Blatchley calls the "old fashioned naturalist" and not to the collector of insects who goes into the field only on rare occasions and then rushes wildly about chasing butterflies or dragon flies, beating bushes and trees, or sweeping the grass and weeds, intent only on corralling the complete insect population of the district. It is he and his kind that build up the great collections of insects that become the mecca of the systematists, but he misses the real joy of the great out-of-doors. It takes leisure as well as a real love of nature to make a Thoreau or a Blatchley and most of us must be content to take ours by reading their books. "In Days Agone" differs from most books of its kind in that it gives the scientific names of the insect material, so it becomes a very storehouse of facts for the entomologist interested in the relationship of the insect to its surroundings. For the collector planning a visit to Florida Professor Blatchley's book would be the best guide he could get. I have stressed the entomological features of the book but it treats of all forms of animal and vegetable life encountered by the author, insect life being perhaps predominant, but nothing is neglected that a true lover of nature would observe. The insects mentioned in the book will be found in the index under the name of the genus only.

The book is very appropriately dedicated to the author's two naturalist associates of earlier days, Dr. David Starr Jordan and Dr. Barton Warren Evermann, both of whom have finished their studies and have passed on ahead.—E. P. Van Duzee.